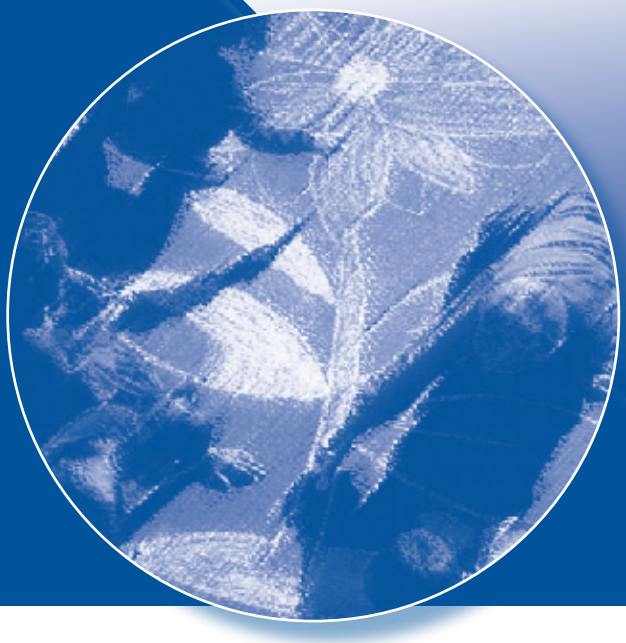
Child Deaths IN MICHIGAN 2005

Michigan Child Death
State Advisory Team
Fifth Annual
REPORT

A Report on Reviews conducted in 2002 and 2003

A report on the causes and trends of child deaths in Michigan based on findings from community-based Child Death Review Teams. With recomendations for policy and practice to prevent child deaths.



The Michigan Department of Human Services
Michigan Public Health Institute

STATE OF MICHIGAN
DEPARTMENT OF HUMAN SERVICES
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

MARIANNE UDOW
DIRECTOR

Summer, 2005

The Honorable Jennifer Granholm, Governor
Honorable Members of the Michigan Legislature

I am submitting this fifth annual report of child deaths in Michigan, in accordance with Public Act 167 of 1997. This report encompasses two years of data. In 2002 and 2003, nearly 1,200 community representatives in 69 counties met to conduct comprehensive reviews of 1,727 deaths. This report presents the findings from these review meetings. It also highlights trends in deaths to Michigan infants and children from 1990-2003.

In 2002 and 2003, 3,654 children ages 0-18 died in Michigan. While the numbers are significantly lower than in prior decades, the Michigan Child Death State Advisory Team believes that more than half of these deaths were preventable. They could have been prevented through various actions by parents or other caregivers, less risky behaviors by adolescents and/or earlier intervention taken by public support systems.

In addition to the large number of preventable child deaths, wide disparities in race and income persist. Black children died at a rate 2.1 times that of white children in 2003. This rate is even higher in deaths due to perinatal conditions, SIDS, fires, firearms and child abuse. Poor children are most often the victims.

Reducing preventable child deaths will require a combination of increased:
- education and information;
- community support structures; and,
- clarification and strengthening of certain laws and/or regulatory structures.

The Michigan Child Death State Advisory Team presents recommendations in this report based on their study of local review findings. These recommendations can improve the systems in our state that are designed to keep children healthy and protected. Many of these recommendations will require a long-term commitment to children, and funding that may not be possible until our state budget picture improves. As we continue our work, we hope this report furthers the awareness and action of state and local officials as well as the citizens of Michigan on how we can all work together to *keep kids alive*.

Thank you for your continued support in working to make Michigan a safe and healthy place for children.

Respectfully Submitted,

Marianne Udow

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ACKNOWLEDGEMENTS

We wish to acknowledge the dedication of the nearly twelve hundred volunteers from throughout Michigan who serve our state and the children of Michigan by serving on Child Death Review Teams. It is an act of courage to acknowledge that the death of a child is a community problem. Their willingness to step outside of their traditional professional roles, and examine all of the circumstances that lead to child deaths, and to seriously consider ways to prevent other deaths, has made this report possible.

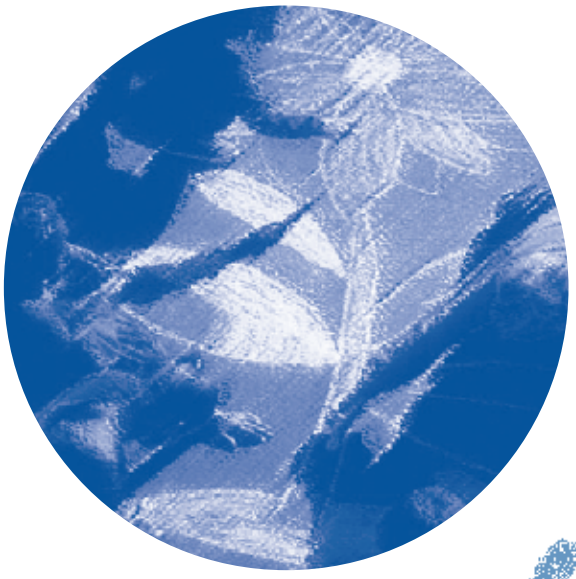
Many thanks to the local Child Death Review Team Coordinators, for volunteering their time to organize, facilitate and report on the findings of their reviews. Because of their commitment to the child death review process, this annual report is published.

The Michigan Department of Community Health, Office of the State Registrar, Division for Vital Records and Health Statistics has been especially helpful in providing the child mortality data and in helping us to better understand and interpret the statistics on child deaths.

The Michigan Department of Human Services provides the funding and oversight for the Child Death Review program, which is managed by contract with the Michigan Public Health Institute.

This report is also available at **www.michigan.gov/dhs** and **www.keepingkidsalive.org**.

Child Deaths IN MICHIGAN



Michigan Child Death State Advisory Team

FIFTH ANNUAL REPORT

Summer 2005

A report on reviews conducted in 2002 and 2003

MISSION

To understand **how** and **why children die** in Michigan,
in order to take **action** to **prevent** other **child deaths**.

Submitted to

The Honorable Jennifer Granholm, Governor, State of Michigan
The Honorable Ken Sikkema, Majority Leader, Michigan State Senate
The Honorable Craig DeRoche, Speaker of the House,
Michigan House of Representatives

Keeping Kids Alive©

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*Funding for these positions supported in whole or in part by the Michigan Department of Community Health, the Centers for Disease Control and Prevention, the Wayne County Health Department, the Detroit Department of Health and Wellness Promotions and/or the U.S. Department of Health and Human Services, Health Resources and Services Administration.

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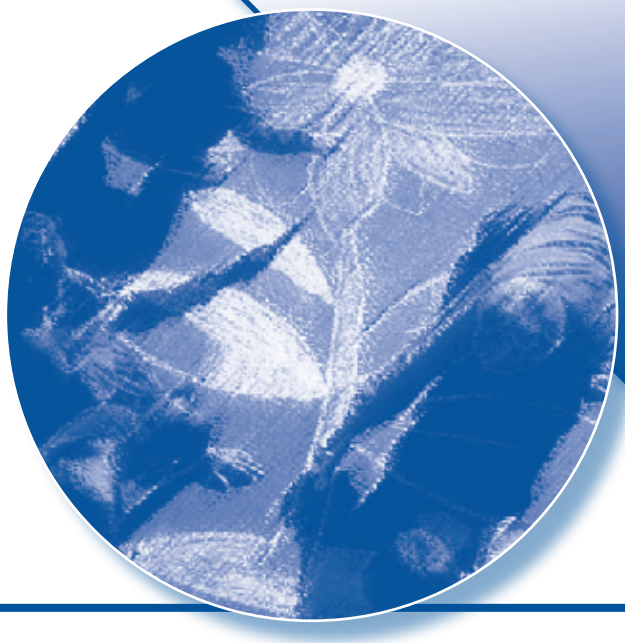


The Michigan Department of Human Services
Michigan Public Health Institute

Introduction

Children are not supposed to die. The death of a child is a profound loss not only to the child's parents and family, but also to the larger community. In order to reduce the numbers of these tragic losses, we must first understand how and why our children are dying.

The Child Death Review (CDR) process was implemented in Michigan in 1995 to do just that. CDR brings together a multidisciplinary group of people at the county level to conduct in-depth reviews of child deaths. These reviews identify the adverse factors that led to the death. The reviews motivate communities to take action to eliminate these factors in order to prevent similar tragedies in the future. The review process also aims at improving a community's response to child deaths, including investigations and provision of services to those affected by the death.

The Michigan Child Death State Advisory Team studies county review team findings. The State Team was authorized by Public Act 167 of 1997 to identify and make recommendations on policy and statutory changes pertaining to child fatalities and to guide statewide prevention, education and training efforts (Appendix B lists recommendations from past annual reports on which some type of action has been taken). It is required to publish these annual reports on child fatalities, based on the compilation of death data reported by the state registrar, as well as data received from the county level CDR teams across the state. This fifth annual report is the first to include two year's worth of data. In the years 2002 and 2003, county teams reviewed 1,727 child deaths.

This report is written in memory of all of the children in Michigan who have died. The Michigan Child Death State Advisory Team issues this report with the hope that it will encourage additional efforts, both in local communities and among our state leaders, to keep every child in Michigan safe and healthy.

Michigan Child Mortality Statistics

Child mortality statistics are the official count of the numbers of deaths based on death certificates of children ages 0-18 in Michigan. These statistics are tabulated by the Division for Vital Records and Health Statistics, Office of the State Registrar, at the Michigan Department of Community Health. In 2002, there were 1,823 children who died in Michigan. In 2003, the total was 1,831 children (a rate of 68.2 per 100,000 population). This represents a 32% reduction from 1990, when 2,693 children died (a rate of 103.6 per 100,000 population).

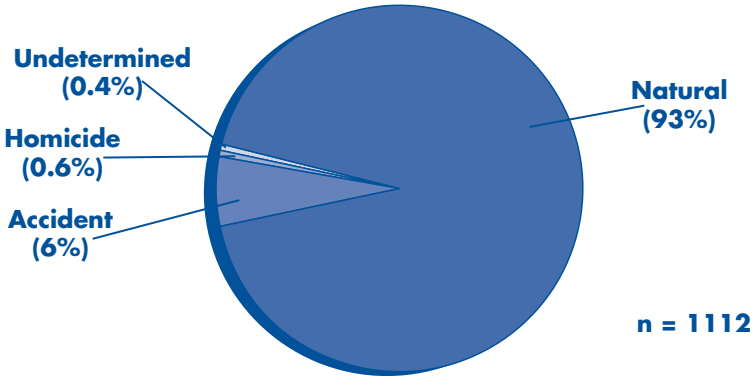
By manner*, natural deaths represented 72% of all deaths, accidents 21%, homicides 4%, suicides 3% and undetermined manner 1%. The leading causes of accidental deaths were motor vehicle related (56%), suffocation (16%), fires (10%) and drowning (10%).

Infant death due to low birth weight, prematurity or other adverse birth-related event is the leading cause** of death for all children, ages 0-18, representing 33% of all child deaths in 2002 and 2003. Other leading causes included congenital anomalies (13%), motor vehicle crashes (12%) and suffocation (5%).

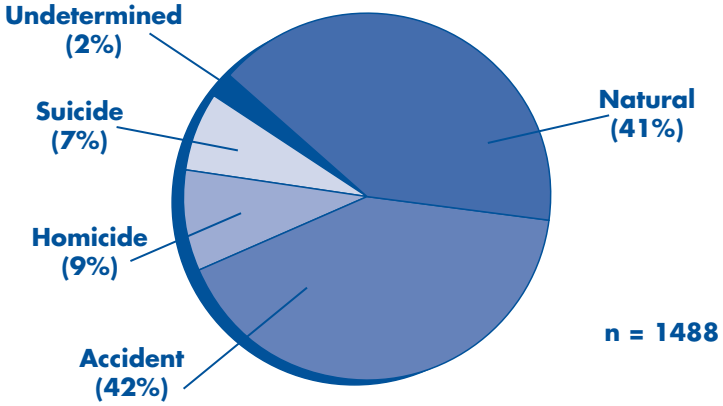
* Manner refers to the circumstances of the death. Within each of the five categories of manner, there can be many different causes of death.
** Cause refers to the actual disease, injury or complications that directly caused the death of the individual.

Overall, for 2002 and 2003, Michigan showed reductions from 2001 in the death rates due to SIDS, firearm accidents and firearm homicides. There were however, increases in the rates of deaths due to motor vehicle crashes, suffocations, fires and drownings. Death rates for non-firearm homicides and suicides remained roughly the same.

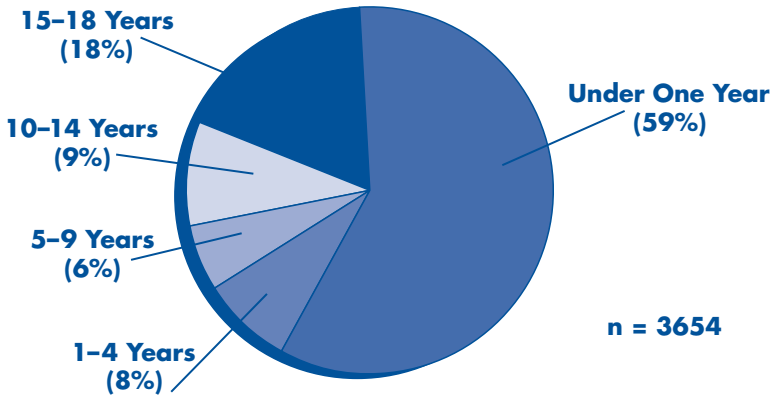
Michigan Infant Deaths by Manner, Ages < 1, 2003



Michigan Child Deaths by Manner, Ages 1–18, 2003



Michigan Child Deaths by Age of Death, Ages 0–18, 2002–2003



Michigan Infant Mortality Statistics

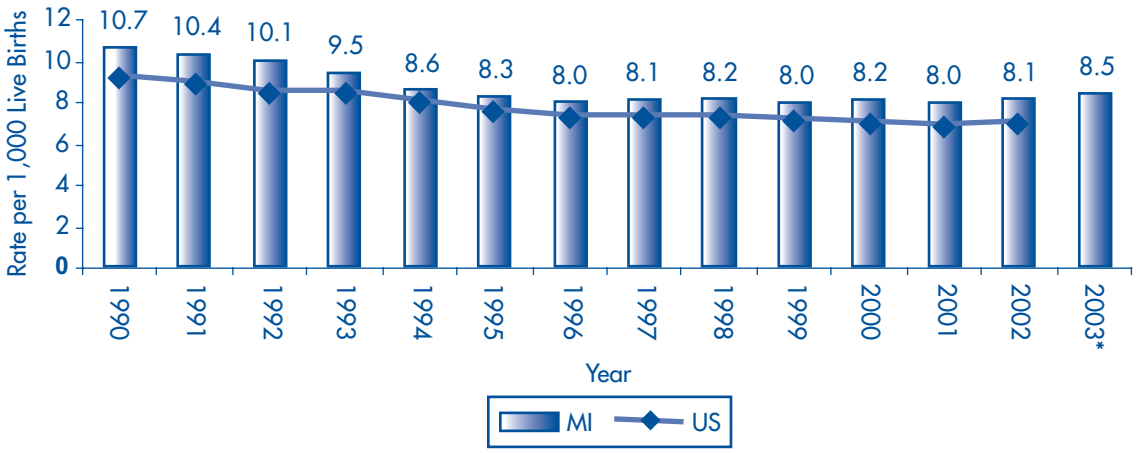
Michigan experienced 1,054 infant deaths in 2002 and 1,112 in 2003. While the birth rate increased one percent between 2002 and 2003, the infant death rate (of 8.5 per 1,000 live births) increased five percent. Still, the infant death rate is 21% less than it was in 1990. Unfortunately, Michigan continues to have higher infant death rates than the national average. The leading causes of infant death in Michigan are perinatal conditions, including low birth weight and prematurity, congenital anomalies, suffocation and Sudden Infant Death Syndrome (SIDS).

The increase in the infant death rate in 2003 is due to an increase in deaths in the neonatal period (first 28 days of life). Of the deaths to infants in 2003, 69% occurred during the neonatal period. The postneonatal death rate (29 to 364 days of age) remained the same from 2002 to 2003.

While the decline in infant mortality since 1990 was similar for black infants (19%) and white infants (15%), substantial racial disparities remain. In 2003, black infants had a death rate 2.6 times that of white infants, which is a larger gap than the disparities that exist for all children aged 0-18 years.

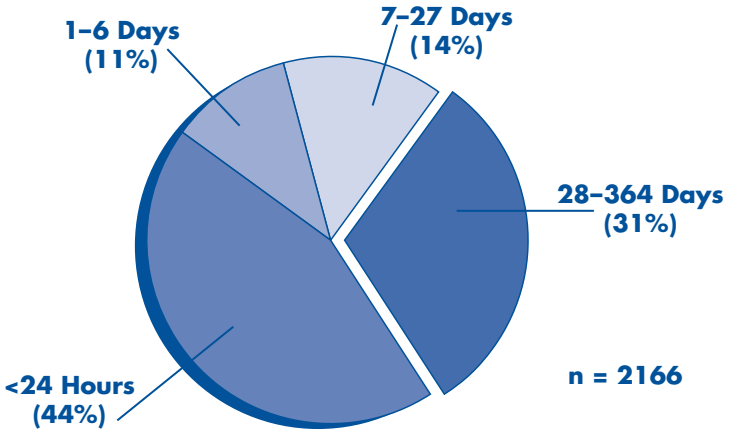
Prematurity and low birth weight continue to be the greatest predictors of infant mortality. Preterm refers to births occurring before the 37th week of pregnancy, and low birth weight infants are those weighing less than 2500 grams or 5 1/2 pounds at birth. While vast improvements have been made in treating these infants, preventing babies from being born too early and too small is still a great challenge.

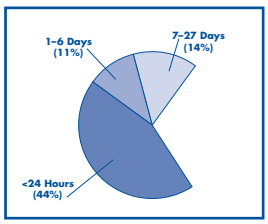
Michigan and United States Infant Death Rates, Ages 0-1, 1990-2003*



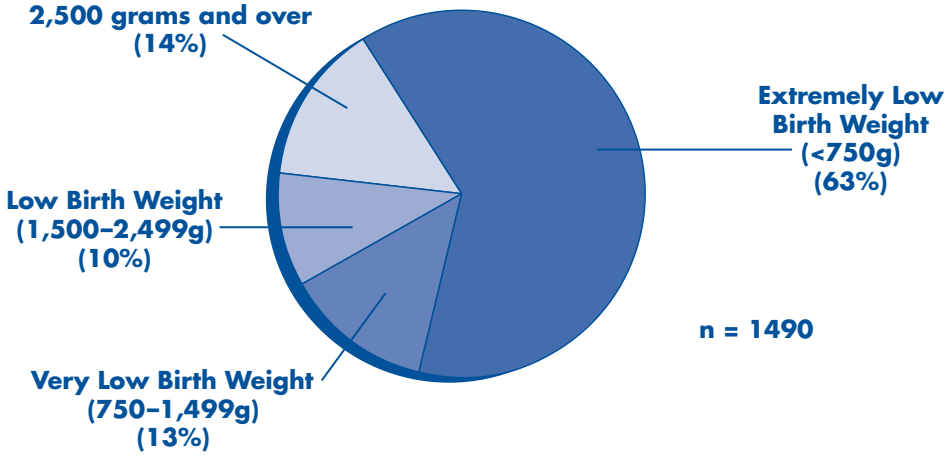
* U.S. infant mortality rates for 2003 are not available.

Michigan Infant Deaths by Age of Death, 2002–2003





Michigan Neonatal Infant Deaths (<28 days) by Birth Weight, 2002–2003



Michigan Child Death Review Statistics

To better understand the child deaths represented by state mortality statistics, nearly 1,200 volunteers from over 20 different disciplines participate in the CDR process at the county level. For 2002 and 2003, they found that had an individual, agency or the community done something differently, over half of the child deaths reviewed (55%) may have been prevented. The teams used their findings to identify and implement changes in local policy, services and programs in order to prevent other deaths, and to better respond to them as a community. Sixty-nine Michigan counties conducted comprehensive reviews of 1,727 child deaths in 2002 and 2003.*

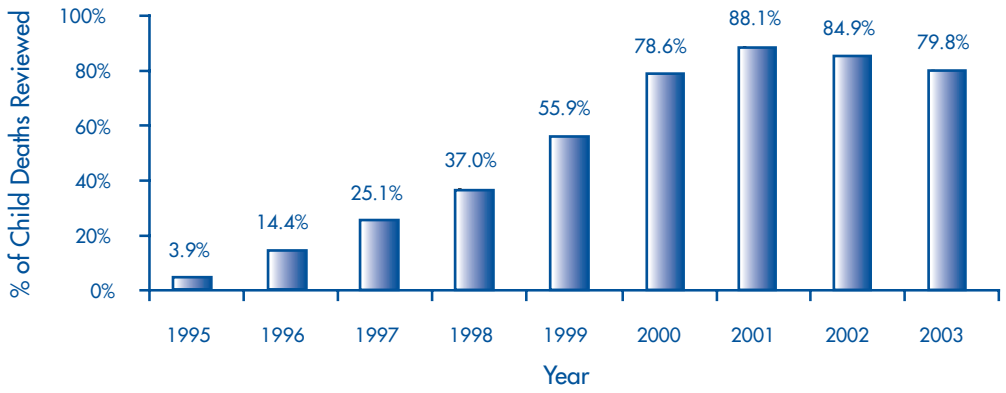
Number of Michigan Child Deaths Reviewed by Year of Review

Year of Review	Number
1995	3
1996	130
1997	201
1998	492
1999	601
2000	807
2001	885
2002	899
2003	828
Total	**4,846**

* Two types of data are used throughout this report. The reader is cautioned not to make a one-to-one comparison between the mortality statistics from death certificates and findings from child death reviews.

Many local teams attempt to review all manners and causes of child deaths. In 2002 and 2003, teams reviewed 765 natural deaths, 636 accidents, 135 homicides, 85 suicides and 106 deaths of undetermined manner. A much higher percentage of unintentional injury and violent deaths have been reviewed than of natural deaths. Since prevention efforts most often focus on injury and violence, it is important to capture details on as many of these types of deaths as possible.

Percent of Non-Natural Child Deaths in Michigan Reviewed by Local CDR Teams*



* Child death reviews conducted in 2004 will contain some deaths that occurred in previous years.

This report summarizes the findings of the local teams and presents recommendations based on those findings to the Governor and the Michigan Legislature. The State Advisory Team recognizes that current state budget limitations may require that some recommendations be implemented in future years, and trusts that future state budget deliberations will consider these proposed enhancements to state services and programs. The following sections describe specific findings and recommendations related to the review process and by cause of death.

The Child Death Review Process

There is no legislative mandate requiring participation in Child Death Review, yet nearly 1,200 volunteers in 69 counties conducted 1,727 reviews of deaths to children in 2002 and 2003. Of the 14 remaining counties that did not conduct reviews in these two years, half had five or less child deaths occur in that time frame.

CDR teams are required by statute to have the following core membership:

- Public Health Department
- Law Enforcement
- Medical Examiner's Office
- Department of Human Services
- County Prosecutor's Office

In addition, most teams have much broader representation, which often include the following:

- Community Mental Health
- Emergency Medical Services
- Schools
- Hospitals and Physicians
- Courts
- Other Community Providers

The teams attempt to review all deaths of children under the age of 19, with the exception of the largest counties in Michigan (Genesee, Ingham, Kent, Macomb, Muskegon, Oakland and Wayne). Because of their high numbers of child deaths, these teams select for review cases that fall under the jurisdiction of the medical examiner. These include sudden and unexpected deaths, accidents, homicides and suicides.

An effective review begins with all participants sharing relevant information from their agencies regarding the circumstances surrounding the child's death. Team members ask for clarification as needed. The team discusses each death, considering the following questions:

- Is the investigation comprehensive and complete?
- Are there services we should be providing?
- What were the risk factors involved in the death?
- Are there agency policies and practices that should be changed?
- What action are we going to take locally to prevent another death?
- Who should take the lead to implement our recommendations?
- What recommendations should we make to the state?

Teams were proactive in translating their findings to action. Teams proposed 618 prevention initiatives and took action to implement 339 of these at the time that they submitted their reports. However, many teams noted that they were unable to implement their initiative ideas due to funding constraints.

Recommendations Regarding the CDR Process

1. The Michigan Legislature: Ensure continued and enhanced resources to support the comprehensive review of Child Death Review (CDR) findings and trends, enhance local prevention efforts and training for CDR team members.

2. The Michigan Department of Community Health: Consider establishment of a state-based regional medical examiner system.

Special Issues in Child Deaths

This annual report presents mortality data and CDR team findings based on cause of death. Most of these causes are fairly easily categorized: motor vehicle crashes, drownings, etc. There are, however, two types of child deaths that currently pose unique challenges. This section highlights the special issues involved in deaths to infants in sleep environments and child abuse and neglect fatalities.

Infant Deaths in Sleep Environments

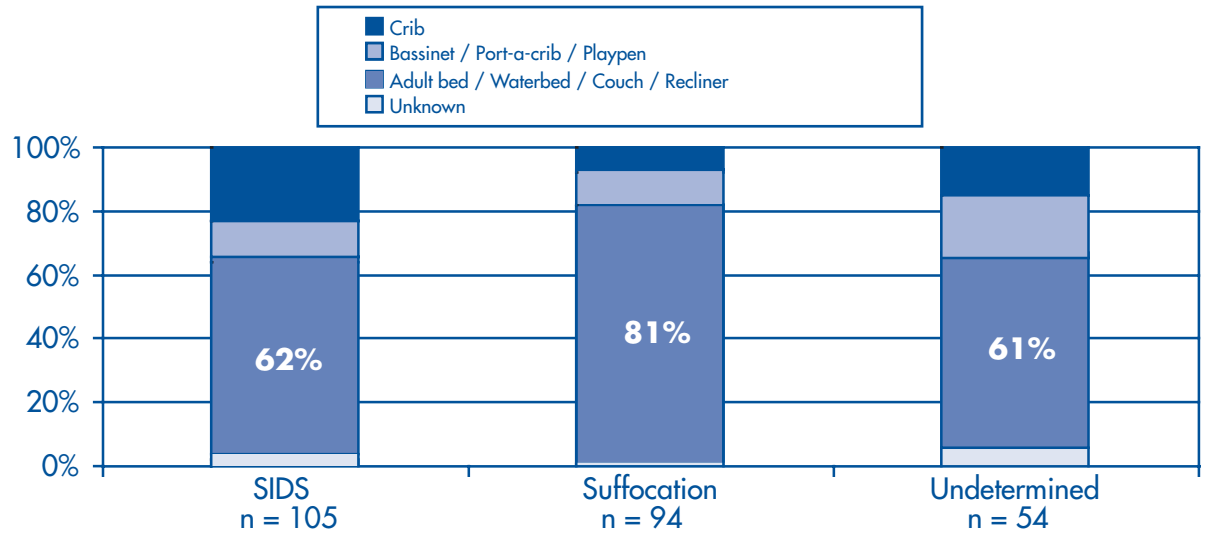
CDR teams reviewed the deaths of 253 infants in 2002 and 2003 that were in a sleep environment at the time of their deaths. A national debate is ongoing in medical, legal and human services circles regarding the diagnoses that are assigned to infants who die suddenly and unexpectedly in sleep situations. The debate relates to how to categorize these deaths when the scene investigation reveals the presence of risk factors such as unsafe infant sleep position and sleep location, unsafe infant bedding and bed-sharing: is the death due to SIDS, accidental suffocation, or should the manner and cause be classified as undetermined?

From a prevention perspective, how these deaths should be classified is eclipsed by the fact that these infants share the same or similar risk factors in their sleep environments.

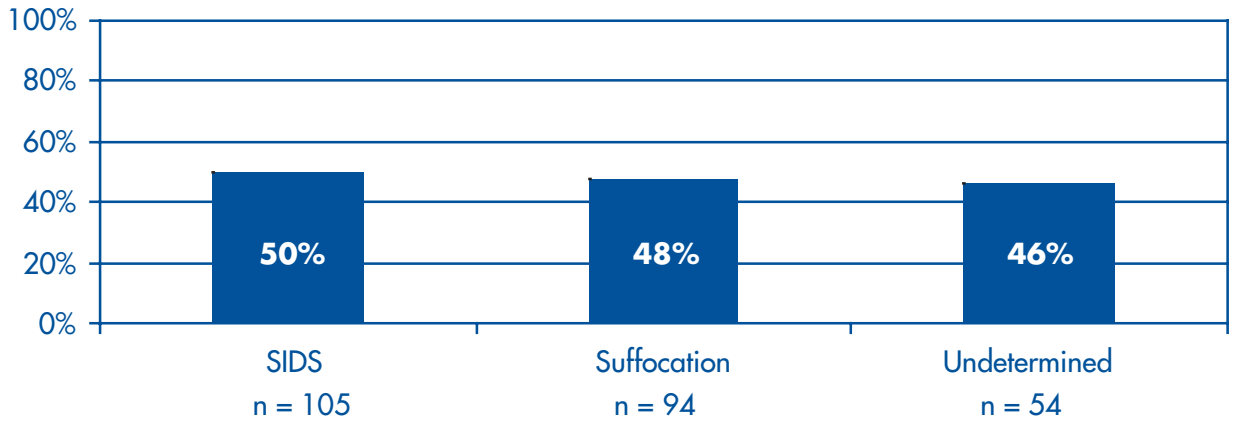
In analyzing the reviews of 105 SIDS deaths, 94 infant suffocations in unsafe sleep environments and 54 infant deaths of undetermined manner (and often cause) that occurred in sleep situations:

- Despite the fact that the Consumer Product Safety Commission (CPSC) recommends that the safest place for a baby to sleep is in a crib, 84% of these 253 infants were not sleeping in cribs at the time of their deaths.
- Contrary to the CPSC's recommendations that parents and caregivers remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib and use a sleep sack as an alternative to blankets, 48% of the infants were in heavy or soft bedding at the time of their deaths.
- Over half (52%) were sharing a sleep surface with one or more persons at the time of their deaths.

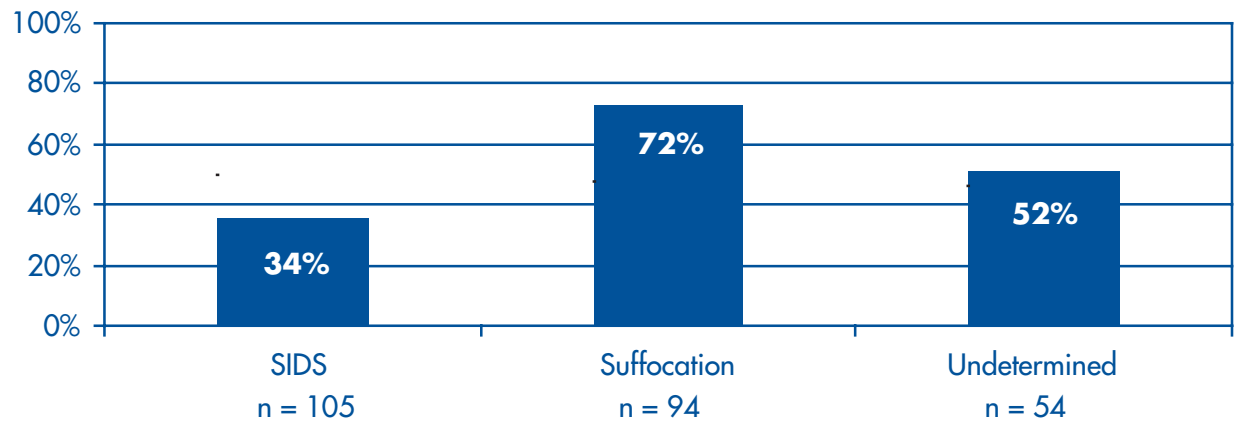
Infant Sleep Location by Official Cause, 2002-2003



Infants in Heavy/Soft Bedding by Official Cause, 2002-2003



Infants Bed-Sharing by Official Cause, 2002-2003



Since most of the risk factors involved in infant sleeping deaths are easily modifiable, these high numbers of deaths can only be seen as unacceptable, and should serve as a call to action at every level. A state level task force has been studying these issues and is currently in the implementation phase of a statewide safe sleep campaign.

While discussions will no doubt continue regarding the diagnosis of these types of deaths, it is important to recognize the tremendous impact of unsafe sleeping environments. Reducing the numbers of these tragedies will not occur without addressing the risk factors involved.

Under-Counting of Child Abuse and Neglect

In Michigan as well as nationally, the actual number of child abuse and neglect deaths is estimated to be much higher than what is reported by death certificate data. A study published in Pediatrics (2002) estimated that about half of child abuse and neglect deaths are not coded consistently on death certificates. Neglect was identified as the most under-reported form of fatal maltreatment. There are a number of explanations for the under-reporting of fatal child abuse and neglect, including:

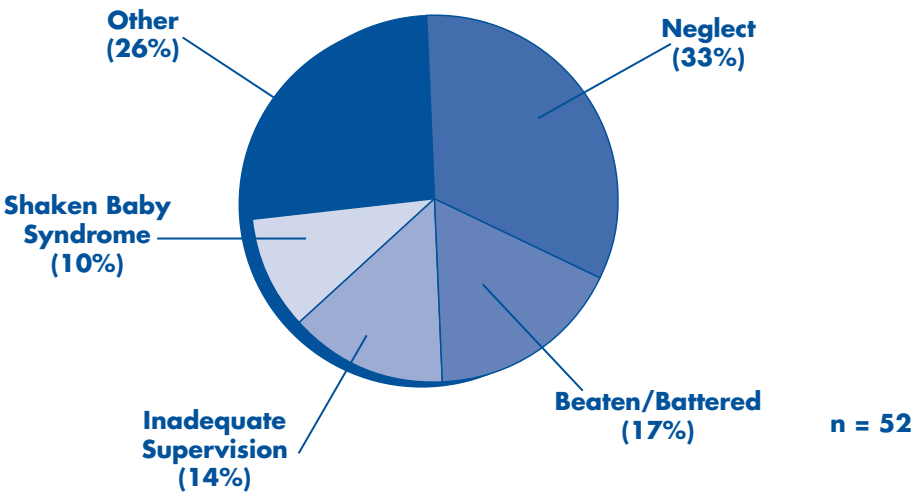
- Physical abuse deaths may be coded as manner homicide, but the cause is not coded specifically as child abuse because the perpetrator is not listed on the death certificate.
- Neglect deaths may be coded as manner natural, for example due to malnutrition, hyperthermia or infectious disease.
- Some deaths may be coded as accidents, even though grossly negligent acts (or failures to act) on the part of caregivers contributed to the death.
- Deaths may have been poorly investigated and the child abuse or neglect went undetected.

In coordination with CDR, Michigan has taken a number of steps to develop a system to better identify all child abuse and neglect deaths. These steps included:

1. *The Michigan Child Maltreatment Surveillance Project*: In 2001, Michigan was one of five states awarded a grant by the Centers for Disease Control and Prevention (CDC) to develop a better method to count fatal child maltreatment. Using data from four different disciplines that collect such information, the project found that:
    - The CDR process identified the largest number of both abuse and neglect deaths, followed by the Michigan Department of Human Services (MDHS) reports.
    - Crime and homicide reports identify most abuse deaths, but no neglect.
    - Death certificates were the least accurate method for determining if abuse or neglect was involved in the fatality.
    - Cases categorized as accidental on the death certificate accounted for over 60% of the neglect deaths identified by the project.
    - An in-depth review of cases from all four sources is the best method to identify all deaths.
    - The rate of maltreatment fatality was higher for children living below 185% of the poverty line.
2. *The MDHS Citizen Review Panel on Child Fatalities*: In 1999, the federally mandated Citizen Review Panel (CRP) on Child Fatalities was formed in Michigan as a sub-committee of the Child Death State Advisory Team. The CRP meets quarterly to thoroughly examine cases of child abuse and neglect. They conduct an in-depth case review of each fatality, and make recommendations in a formal written report to the director of MDHS. It was through the work of the CRP that MDHS was able to identify the total of 52 child maltreatment deaths that it reported to the National Child Abuse and Neglect Data System (NCANDS) for 2002, as opposed to the 12 that were classified as child abuse or neglect on death certificates. Of those 52 deaths:
    - Over half the victims (54%) were under the age of one
    - Black children were over-represented as victims (54%)
    - Neglect was the most frequent cause of death (33%)
    - Mothers were the most frequent category of perpetrator (52%)

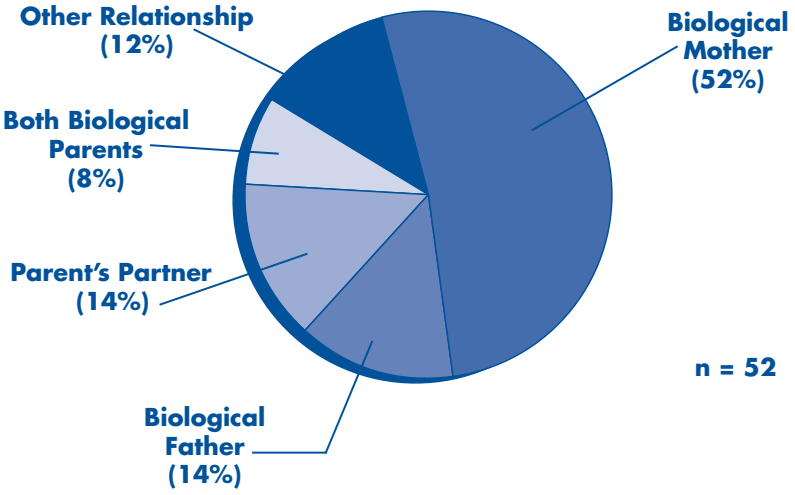
Citizen Review Panel on Child Fatalities

Michigan Child Abuse and Neglect Deaths Identified by Cause of Death, 2002



Citizen Review Panel on Child Fatalities

Michigan Child Abuse and Neglect Deaths Identified by Person Who Inflicted Injury, 2002



3. *Electronic Report of Minor's Death*: In November of 2004, DHS established a policy regarding reporting the deaths of children. These reports notify key DHS administrators of the fatality and the circumstances surrounding it, so that they may ensure that required agency procedures have been initiated. The new Child Death web report was developed to record a child fatality that is reported by county DHS offices for children involved with Children's Protective Services (CPS), Foster Care, Juvenile Justice Foster Care and Adoption. Also, the Office of Child and Adult Licensing (OCAL) is required to report all deaths occurring in DHS-related child care homes, facilities and camps. This report provides MDHS with the capability to correctly identify child maltreatment fatalities in CPS data systems without extensive case reading. It also allows for the analysis of these cases across any data variable available. Over time, as deaths are recorded in this manner, trends will be easier to identify. Furthermore, appropriate analysis of these data trends will assist MDHS in developing prevention initiatives for children and families.

Child Mortality and Death Review Findings for Specific Causes of Death

Natural Infant Deaths Excluding SIDS, Ages 0-1

Key Findings

In 2002 and 2003, there were 1,870 Michigan infants ages 0-1 who died of natural causes, excluding SIDS. This represents a 25% decrease from 1,324 deaths in 1990 to 987 deaths in 2003. However, there is a significant increase from 883 deaths in 2002 to 987 death in 2003. CDR teams reviewed 430 natural infant deaths excluding SIDS in that time period. The medical complexities of these deaths often make it difficult for the teams to review them. However, the specialized Fetal and Infant Mortality Review (FIMR) process, currently existing in 14 Michigan communities, effectively reviews these types of deaths. FIMR findings are discussed in a later section.

Of the 430 cases reviewed, teams found that almost half of the babies died within 48 hours of birth. Prematurity and low birth weight were the most frequent causes.

Cigarette smoking during pregnancy is a major risk factor for low birth weight, intrauterine growth retardation and infant death. In more than 16% of the cases, the mother admitted to smoking during pregnancy.

Recommendations Regarding Natural Infant Deaths Excluding SIDS

1. The Michigan Department of Community Health: Expand and continue technical and financial support to Fetal and Infant Mortality Review Programs in communities with high infant mortality rates and racial disparities.

2. The Michigan Department of Community Health: Promote the Grief and Bereavement services through the SIDS and Other Infant Death Program to medical examiners, hospitals, local public health departments, Fetal and Infant Mortality Review teams and local Child Death Review teams.

3. The Michigan Legislature: Continue to provide Medicaid coverage for family planning services to include all women up to 185% of the poverty level.

4. The Michigan Surgeon General: Work with medical practitioners, medical organizations and insurance companies to ensure:

   a. An increase in the number of providers that discuss pregnancy intendedness at every visit with all females of childbearing age.

b. Providers offer preconception counseling to all females of childbearing age.

c. Adequate numbers of providers that accept Medicaid patients, in reasonable proximity to those patient populations.

d. Early access to and continuity of care for all pregnant females.

e. Compliance with state laws that require physicians to offer pregnant females client-centered counseling and voluntary HIV testing.

f. Screening for all pregnant females and new parents for domestic violence and substance abuse.

g. Redesign of the Maternal Support Services and Infant Support Services programs to:

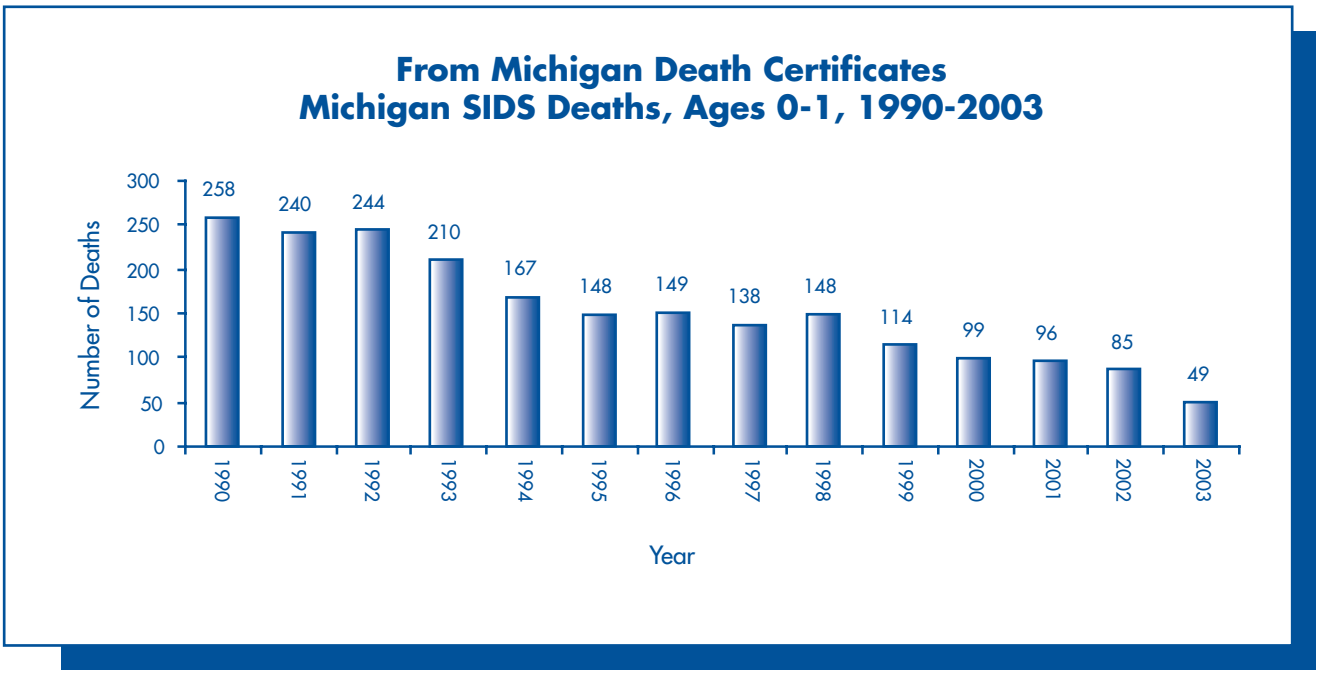
- Improve identification and increase referrals of high risk persons;
- Assure a quality assessment is performed;
- Assure services are designed to specifically reduce risk; and
- Design reimbursement to reinforce the likelihood of improved birth outcomes.

h. Providers offer referrals to smoking cessation services for pregnant and new parents.

Natural - Sudden Infant Death Syndrome

Key Findings

In 2002 and 2003, there were 134 Michigan infant deaths that were attributed to SIDS. This represents an 81% decrease from 258 deaths in 1990 to 49 deaths in 2003. CDR teams reviewed 104 SIDS deaths in 2002 and 2003.



SIDS is defined as the sudden death of an infant under one year of age which remains unexplained after completion of an autopsy, a thorough death scene investigation and a review of the infant's medical history. If

these three criteria are not met, a SIDS diagnosis should not be made. Teams reported that in 96 of the cases, death scene investigations were conducted. In half of the cases, medical records were known to have been reviewed by the medical examiner.

Sixty-three percent of SIDS victims were male and 37% were female. About 89% of these infants died before six months of age.

In only eight of the 104 SIDS deaths reviewed was the baby sleeping in a crib, alone and on his or her back. The other 96 babies were sleeping in unsafe positions or places. Seventy-seven percent of the babies were not sleeping in cribs; 67% of the infants were sleeping on their stomachs or sides and 21% were sharing a bed with other children or adults. In nearly half the cases, the baby was in a sleep environment that contained heavy bedding.

Recommendations Regarding SIDS Deaths

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

2. The Children's Cabinet: Collaborate among member agencies and partner with the Michigan Department of Community Health's SIDS and Other Infant Death Program and Michigan professional associations to implement a statewide campaign promoting safe infant sleep environments consistent with the recommendations of the American Academy of Pediatrics.

3. The Michigan Department of Community Health: Strengthen the prenatal smoking cessation program, especially as it relates to Sudden Infant Death Syndrome.

All Causes of Natural Child Deaths, Ages 1-18

Key Findings

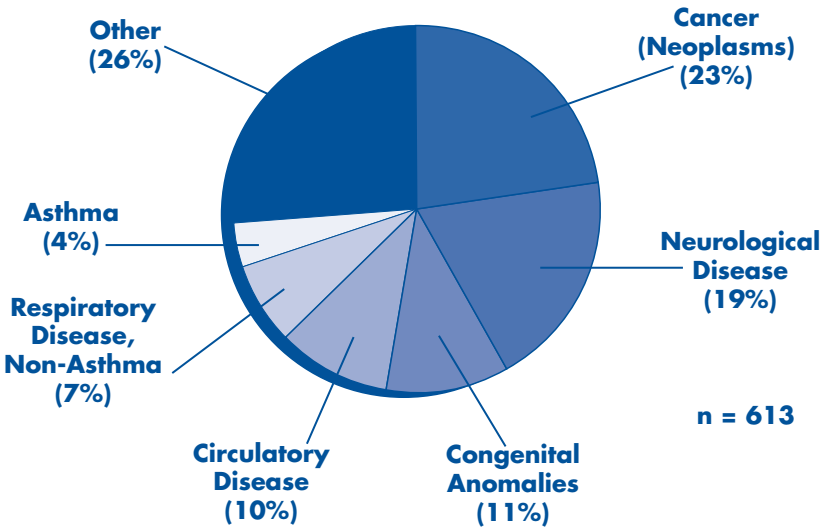
In 2002 and 2003, there were 613 Michigan children over age one who died due to natural causes. This represents a 27% decrease from 397 deaths in 1990 to 289 deaths in 2003. CDR teams reviewed 230 natural deaths to children over age one in 2002 and 2003.

Asthma or other respiratory illness, congenital anomalies, cerebral and cardiac conditions were the top causes of death in this category. Of the 23 asthma deaths reviewed, over half of the children were ages 10-14.

The children (ages 1-18) were receiving Children's Special Health Care Services from their local health department in 43 cases of the 230 cases of child death due to natural causes reviewed (19%).

From Michigan Death Certificates

Michigan Natural Child Deaths 1–18 by Cause of Death, 2002–2003



Recommendation Regarding Natural Deaths to Children Ages 1-18

1. The Michigan Department of Community Health and the Michigan Department of Human Services: Support a partnership and the sharing of information between the Michigan Child Death Review Program and the Michigan Asthma Coalition to improve the diagnosis, treatment and prevention of childhood asthma.

Accidental - Motor Vehicle

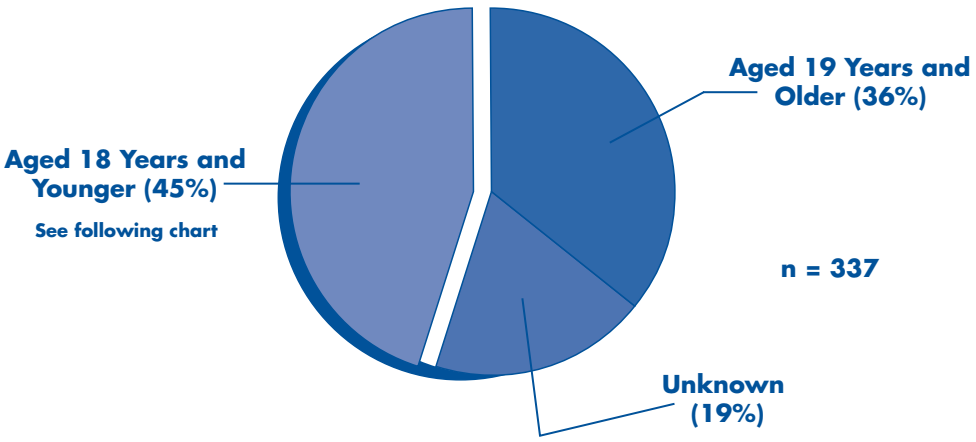
Key Findings

In 2002 and 2003, 432 Michigan children died in motor vehicle crashes. This represents a 21% decrease from 272 deaths in 1990 to 215 deaths in 2003. CDR teams reviewed 337 such deaths in 2002 and 2003.

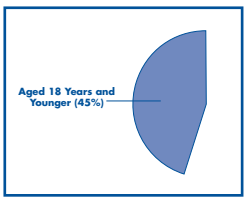
Teams found that drivers 16-18 years old were nearly three times as likely to be at fault in the fatal crashes reviewed than the next most frequent at-fault age group (22-35).

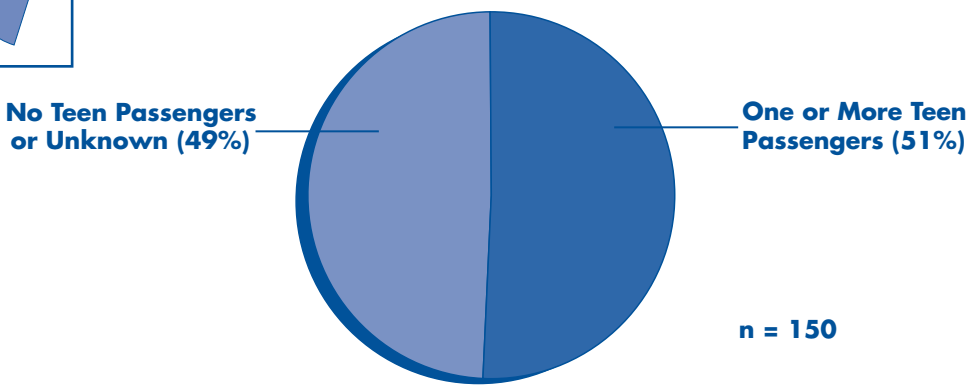
The number of teen passengers in a vehicle at the time of a crash is a major risk factor for young drivers. One or more teen passengers were in the vehicle in half of the fatalities reviewed where the driver at fault was 18 years of age or under.

Accidental Motor Vehicle Child Deaths
Reviewed by Driver at Fault, 2002–2003



Accidental Motor Vehicle Child Deaths
<18 Year Old Driver at Fault
Reviewed by Teen Passengers, 2002–2003





Some teams have identified lack of experience driving in poor weather conditions and on gravel roads as being risk factors for new teen drivers. When weather conditions were noted: for normal road conditions, drivers less than 18 were at fault in 39% of the cases reviewed; in poor weather (ice/snow, wet or foggy), drivers less than 18 were at fault 59% of the time. Even more striking, when the crash occurred on gravel roads, drivers less than 18 were at fault 87% of the time.

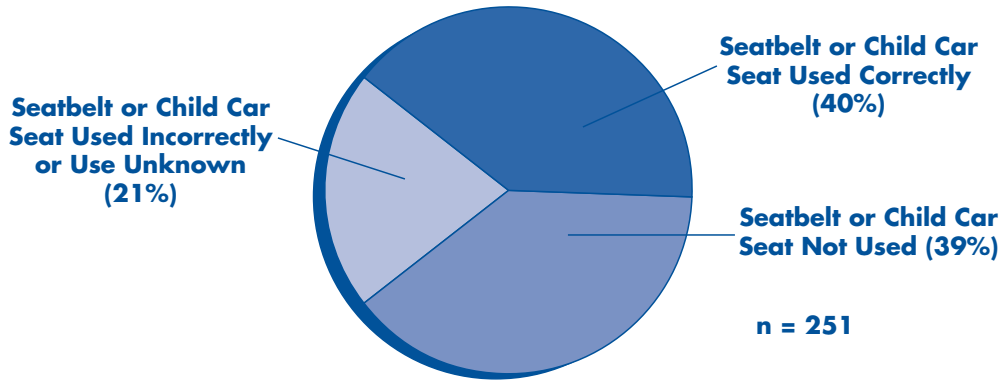
Of the 14 bicycle-related crashes, 13 children were known to have been not wearing a bike helmet at the time, and in the other case, this item was left unanswered.

Children that are killed as pedestrians are not always toddlers and young children who dart out into traffic. Local teams found that the majority of the pedestrian cases reviewed were to kids ages 10 and over (58%).

Eight children were killed in ATV-related crashes. Two deaths were to children between the ages of 12 and 15, where law requires the visual supervision of an adult, but neither was in sight of a supervising adult. Another two deaths were to children under the age of 10, who are not supposed to operate such vehicles.

An appropriate restraint (whether seat belt or child car seat) was used correctly in about 40% of the cases of child deaths in motor vehicle crashes.

Accidental Motor Vehicle Child Deaths Reviewed by Restraint Use, 2002–2003



Recommendations Regarding Motor Vehicle Deaths to Children

1. The Michigan Legislature: Amend the current graduated licensing law to place limits on the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses. This limitation should apply at all times of the day, and without an exception allowed for written parental permission.

2. The Michigan Department of State: Partner with the Office of Highway Safety Planning and the Michigan Department of Community Health to conduct a comprehensive review and revision of driver education programs throughout the state to ensure that the curricula adequately address all high-risk driving situations.

3. The Michigan Department of Education: Through the Great Parents, Great Start program, work with Michigan SAFE KIDS to develop a system for distributing child safety seat information to parents, coordinated through the local Intermediate School Districts.

4. The Michigan Legislature: Amend the Michigan Child Passenger law to:

   a. Require the use of booster seats to protect children ages 4-8 and under 4'9";

   b. Increase fines and points for those not following the law; and

   c. Increase public awareness and education programs.

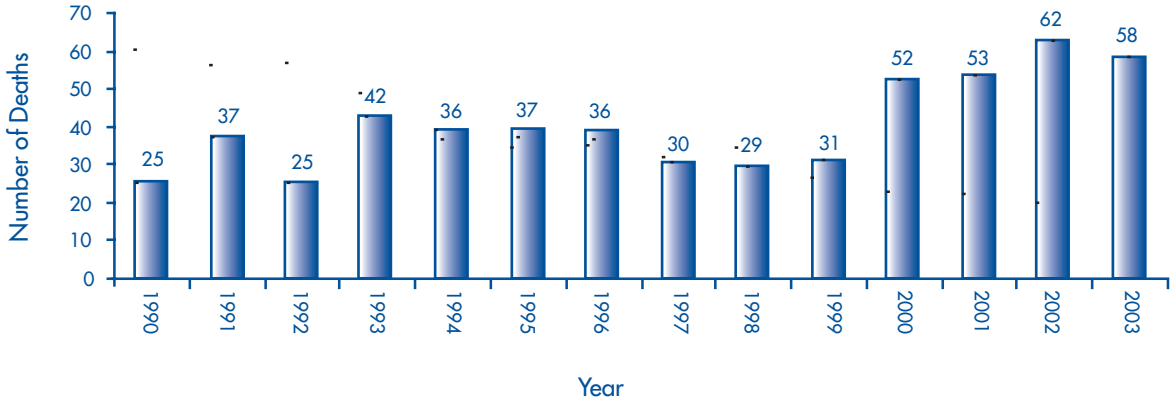
5. The Prosecuting Attorneys Association of Michigan: Educate all law enforcement agencies through their Police Law Bulletin, regarding Public Act 451 of 1994 (MCL 324, sections 81129 and 81130); specifically, regarding the restrictions on children younger than 16 in the operation of all off-road vehicles, and encourage the prosecution of cases wherein this law was violated.

Accidental - Suffocation and Strangulation

Key Findings

In 2002 and 2003, there were 120 Michigan children who died due to accidental suffocation or strangulation. The rate of infant death due to accidental suffocation or strangulation has increased 63% from 18 in 1990 to 49 in 2003. CDR teams reviewed 117 accidental suffocation deaths to children ages 0-18 in 2002 and 2003.

From Michigan Death Certificates
Michigan Child Deaths from Accidental Suffocation, 2002-2003



The vast majority of all suffocation deaths reviewed were to infants less than one year of age (85%).

In 57 of the 117 cases reviewed, the child suffocated when another person rolled over onto them during sleep. Sleeping locations in these incidents were: 39 in adult beds, 10 on couches, three in reclining chairs, two on futons, one on an air mattress and in the other two cases, information about sleeping location was not given.

Twelve of the 15 reviews of children who died when they became wedged between two objects were of infants in sleep environments. Eight of these 12 were placed on adult beds to sleep and subsequently became wedged (e.g., between the mattress and the wall, between the mattress and the headboard, etc.).

Twenty-two cases were reviewed in which infants suffocated in their bedding. Most of these babies (82%) were three months of age or younger.

Recommendations Regarding Suffocation and Strangulation Deaths to Children
[Note: 1 and 2 are the same as in the SIDS section.]

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

2. The Children's Cabinet: Collaborate among member agencies and partner with the Michigan Department of Community Health's SIDS and Other Infant Death Program and Michigan professional associations to implement a statewide campaign promoting safe infant sleep environments consistent with the recommendations of the American Academy of Pediatrics.

3. The Michigan Chapter of the American Academy of Pediatrics: Identify a partner with whom to host a "Train the Trainer" event for pediatricians around the state in order to ensure the dissemination of consistent safe infant sleep messages to parents.

Accidental – Fire and Burn

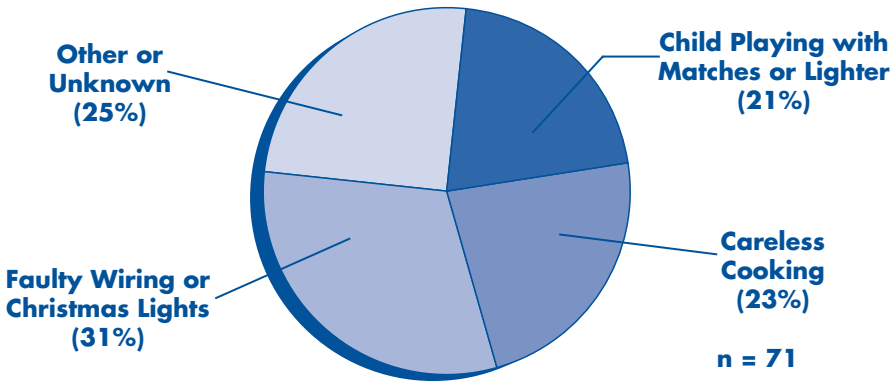
Key Findings

In 2002 and 2003, 75 Michigan children died in accidental fires. The number of fire deaths can vary greatly from year to year, since some fires can involve multiple child victims; the 2003 number is the 5th lowest since 1990. CDR teams reviewed 71 accidental fire deaths in 2002 and 2003. Almost half of the victims were under five years of age.

Local teams determined the socio-economic status of the child fire victims to be "low" in 79% of the cases reviewed.

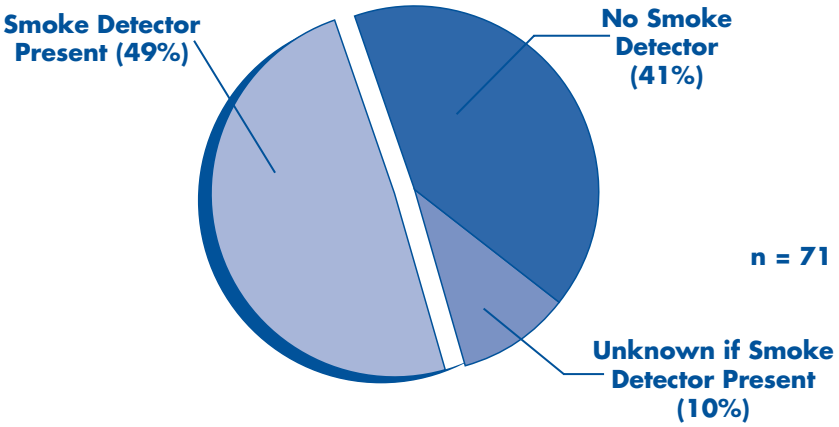
Teams found that children playing with lighters, matches or candles, careless cooking and poor wiring were the top causes of the fires.

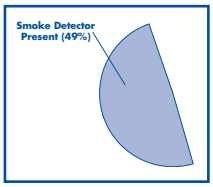
Accidental Fire Child Deaths
Reviewed by Source of Fire, 2002–2003



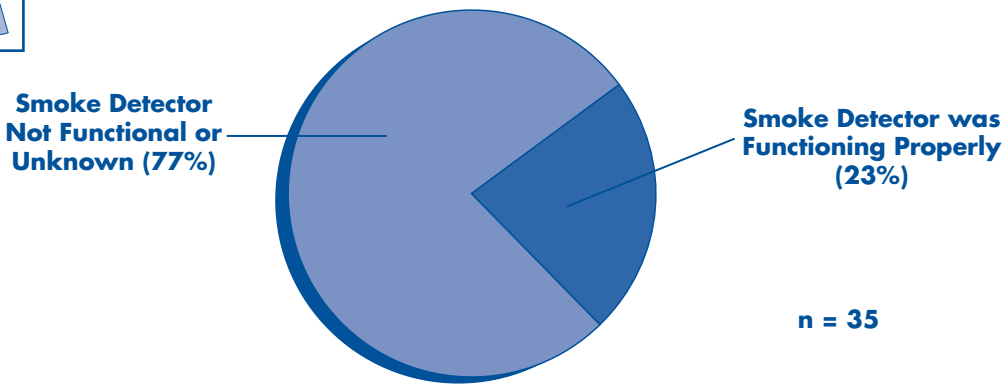
In nearly half the cases (35), it was noted that smoke alarms were present in the home at the time of the fire. However, in only nine cases did the alarms function properly. This was usually because they did not contain working batteries at the time.

Accidental Fire Child Deaths
Reviewed by Smoke Detector Present, 2002–2003





Accidental Fire Child Deaths
Reviewed by Smoke Detector Functional, 2002–2003



When answering whether they believed supervision to have been adequate at the time of the fire, the teams answered "no" or "unsure" in 61% of the fire deaths reviewed.

Recommendations Regarding Fire Deaths to Children

1. The Michigan Department of Community Health, the Michigan State Police and the Michigan Department of Labor and Economic Growth: Campaign to promote local efforts to increase the number of lithium-powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.

2. The Michigan Department of Education and the Michigan Department of Human Services: Ensure that all school districts and child care organizations offer fire safety education for young children, especially in preschool and child care settings.

Accidental - Drowning

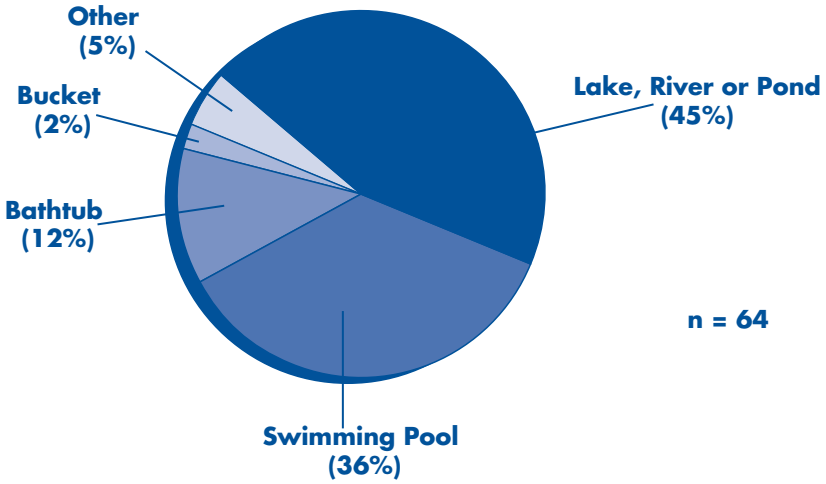
Key Findings

In 2002 and 2003, there were 73 accidental drowning deaths to children. This represents an 18% decrease from 44 deaths in 1990 to 36 deaths in 2003. CDR teams reviewed 64 accidental drowning deaths in 2002 and 2003.

Children ages 1-4 were found to be at increased risk of drowning. But local teams also reported an equally increased drowning risk for youths ages 15-18.

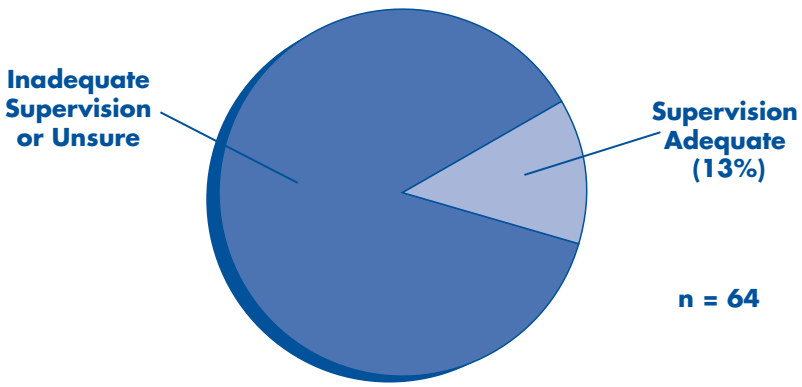
Nine drowning deaths to infants were reviewed. Seven of them were in bathtubs at the time. Over half of the toddlers ages 1-4 drowned in pools and over half of the older children ages 5-18 drowned in open bodies of water (lakes, rivers, ponds, etc.).

Accidental Drowning Child Deaths Reviewed by Location, 2002–2003



Of the 23 child drownings in pools, six children were unattended when they entered the pool area through a gate. Four of these gates were known to have been unlocked at the time. In seven of the 23 cases, the pool was known to have not been completely fenced.

Accidental Drowning Child Deaths Reviewed by Supervision Adequacy, 2002–2003



Recommendations Regarding Child Drownings

1. The Michigan Municipal League, Michigan Association of Counties and Michigan Township Association: Work with communities to enforce the Michigan Construction Codes that require local units of government to adopt and enforce pool-fencing regulations.

2. The Michigan Department of Human Services Office of Children and Adult Licensing: Promulgate child care licensing rules for barriers to pools, hot tubs or open bodies of water at regulated child care facilities.

3. The Department of Natural Resources, Michigan Municipal League, Michigan Association of Counties, Michigan Township Association and Michigan Parks and Recreation Association: Work with local communities to provide adequate signage and appropriate rescue equipment in areas of waterfront and shorelines accessible to the public. Signage should include warnings and appropriate safety precautions.

Accidental – Firearm and Weapon

Key Findings

In 2002 and 2003, there were six accidental firearm deaths to children in Michigan. This represents an 86% decrease from 14 deaths in 1990 to two deaths in 2003. CDR teams reviewed the accidental firearm or other weapon deaths of five children in 2002 and 2003.

The circumstances involved included two hunting incidents, an unintentional self-inflicted wound that resulted from a struggle, a child playing with a firearm found in his home and an unintentional discharge of a weapon due to improper storage. In the last two cases, the firearms were not stored in a locked cabinet and there were no trigger locks on the guns.

In three of the four cases involving minors, teams deemed supervision to have been inadequate at the time of the incidents. All five accidental firearm and weapon deaths were judged to be "definitely" preventable.

Recommendations Regarding Accidental Firearm and Weapon Deaths to Children

1. The Michigan Attorney General's Office: Ensure statewide enforcement of the current laws that require:
   a. Federally licensed firearm dealers to provide, at the point of sale, written materials on gun safety and the proper storage of guns in homes with children; and
   b. Federally licensed firearm dealers are not to sell a firearm in Michigan without a commercially available trigger lock or other device, designed to disable the firearm and prevent it from discharging.

2. The Michigan Legislature: Enact legislation that provides specific criminal penalties to adults who are negligent in the safekeeping of guns that are used to injure or kill children.

3. The Michigan Department of Education: Take the lead in developing an education plan for family gun safety.

Accidental - Other Causes

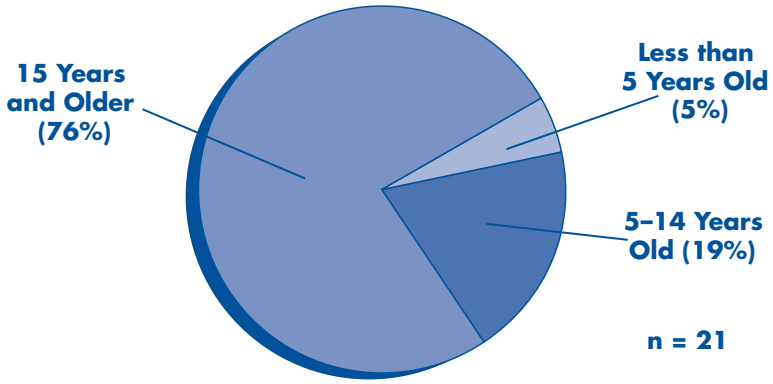
Key Findings

In 2002 and 2003, there were 56 Michigan children who died of unintentional injuries not addressed in previous sections, such as poisoning, falls and injuries sustained when the victims were crushed or struck by objects. CDR teams reviewed 41 such cases in 2002 and 2003.

Only one of the poisoning victims was less than four years old, while nearly three-quarters of the victims were ages 15 or older. Accidental overdose while trying to get high accounted for most of the adolescent poisoning deaths.

Of the 21 unintentional poisoning deaths reviewed, nine were by prescription drugs, six were by illegal drugs and six were due to carbon monoxide.

Accidental Poisoning Child Deaths Reviewed by Child's Age, 2002–2003



Five of the 41 child deaths reviewed in this category were from injuries sustained in falls, and nine cases involved children who died from injuries received when they were crushed or struck by objects.

Homicide - Firearm and Weapon

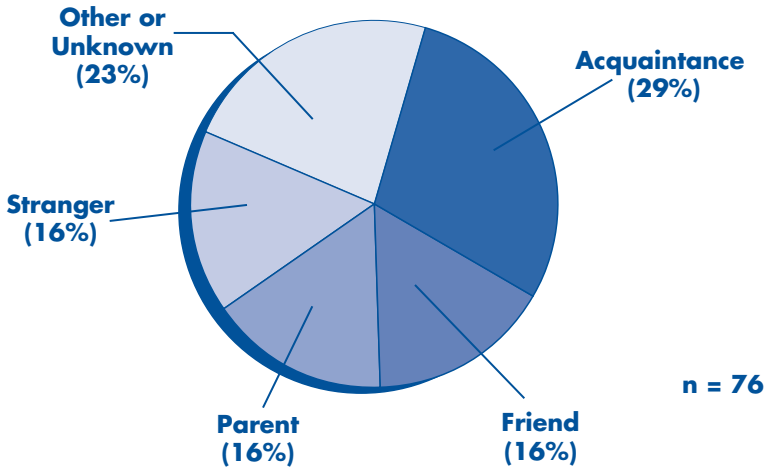
Key Findings

In 2002 and 2003, there were 92 child homicides caused by firearms and other weapons. This represents a 72% decrease from 141 deaths in 1990 to 40 deaths in 2003. CDR teams reviewed 76 firearm and weapon related homicides in 2002 and 2003.

Sixty-five percent of weapon homicides reviewed were to children ages 15-18. Seventy-one percent of these deaths were to black children. Approximately three quarters of the deaths were to children whose families were deemed to be of low socio-economic status.

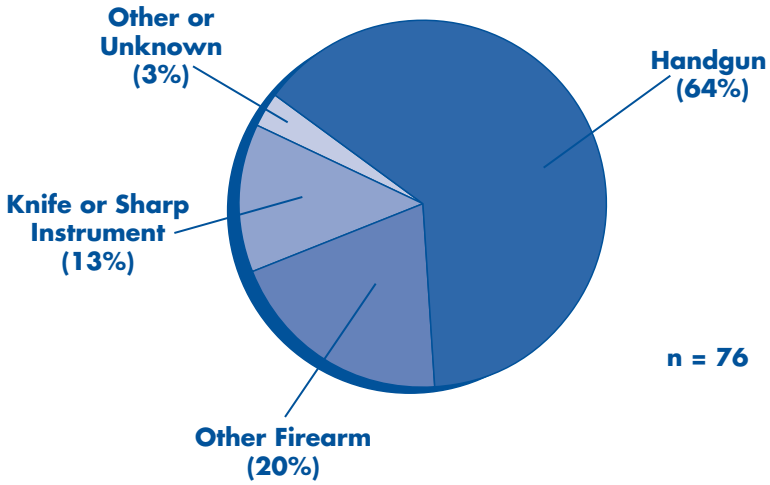
The perpetrator was most frequently an acquaintance (29%), followed by parents, friends or strangers (16% each).

Firearm and Weapon Child Homicides Reviewed by Person Who Inflicted Injury, 2002–2003



Ten of the 76 child homicides reviewed due to firearms or weapons included four sibling groups and were reported by MDHS to NCANDS as being due to child abuse or neglect.

Firearm and Weapon Child Homicides Reviewed by Type of Weapon, 2002–2003



Recommendations Regarding Firearm and Weapon Child Homicides

1. The Michigan State Police: Spearhead an initiative to partner with communities and local law enforcement experiencing high rates of teen homicides, to identify the neighborhoods most at risk for gun homicides, and implement comprehensive violence-prevention initiatives.

2. Michigan Courts: Support enforcement of laws that require gun safety mechanisms on all firearms at the point of sale.

3. The Michigan Department of Community Health and the Michigan Department of Human Services: Work with local Community Mental Health to recognize and ensure treatment for the mental health needs of families.

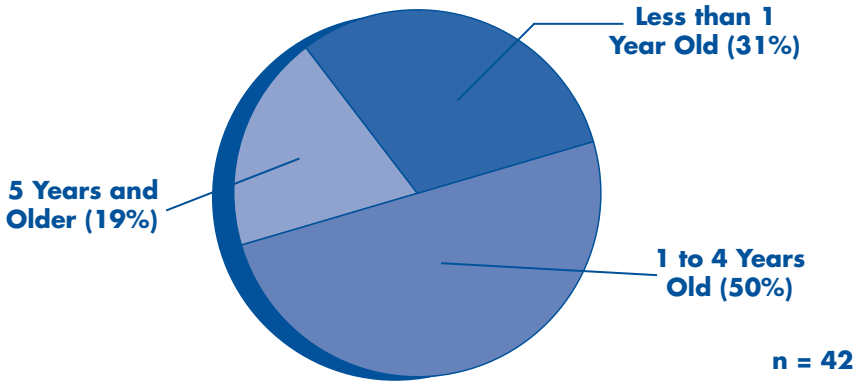
4. The Michigan Department of Community Health: Partner with the Michigan Chapter of the American Academy of Pediatrics to disseminate and implement the AAP's Violent Injury Prevention Program (VIPP) in primary care offices around the state.

Homicide - Child Abuse and Neglect

Key Findings

In 2002 and 2003, death certificate data indicates that 18 Michigan children died due to child abuse and neglect. However, CDR and the Michigan Department of Human Services identified 52 child abuse and neglect deaths in 2002. The process used to fully count maltreatment fatalities for 2003 has not yet been completed. CDR teams reviewed 42 child abuse and neglect homicides in 2002 and 2003.

Child Abuse and Neglect Homicides Reviewed by Child's Age, 2002–2003



Recommendations Regarding Child Abuse and Neglect Homicides

1. The Michigan Department of Human Services, Michigan Department of Community Health and Michigan Department of Education: Ensure that human service professionals working with high-risk families are knowledgeable about support programs and resources for new families, especially Maternal Support Services, Infant Support Services and other State and community-based primary and secondary prevention programs.

2. The Michigan Department of Human Services, Michigan Department of Community Health and Michigan Department of Education, in partnership with other disciplines: Develop (and Michigan Legislature: allocate funds for) home visitation programs using best practices, with home nursing as a component, targeting low-income, at-risk children/families.

3. The Michigan Department of Human Services and the Children's Trust Fund: Continue the Shaken Baby Syndrome Prevention campaign.

4. The Michigan Health and Hospital Association: Implement, statewide, the Children's Trust Fund Shaken Baby Syndrome prevention information/programs.

5. The Children's Cabinet: Commission research identifying the risk and protective factors for fatal child maltreatment.

Homicide - Other Causes

Key Findings

In 2002 and 2003, there were 37 Michigan children who died due to homicides of causes other than firearm and weapon or child abuse and neglect. CDR teams reviewed 17 such cases in that same time period. Over half (53%) of these deaths were to children under the age of five.

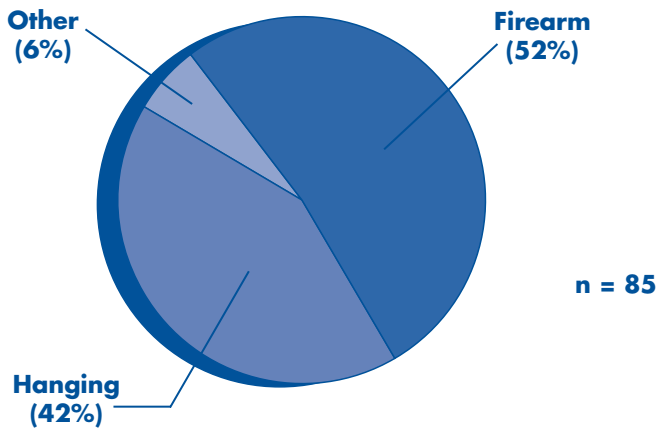
This category includes intentional deaths that resulted from poisoning, motor vehicle crashes, drowning, suffocation/strangulation and fire/burns.

Suicide

Key Findings

There were 97 child suicides in Michigan in 2002 and 2003. Sixty-five percent of these deaths were to white males ages 14-18. The most frequent method of suicide was firearms (47), followed by hanging (42). CDR teams reviewed 85 teen suicides in 2002 and 2003.

Child Suicides Reviewed by Method, 2002–2003



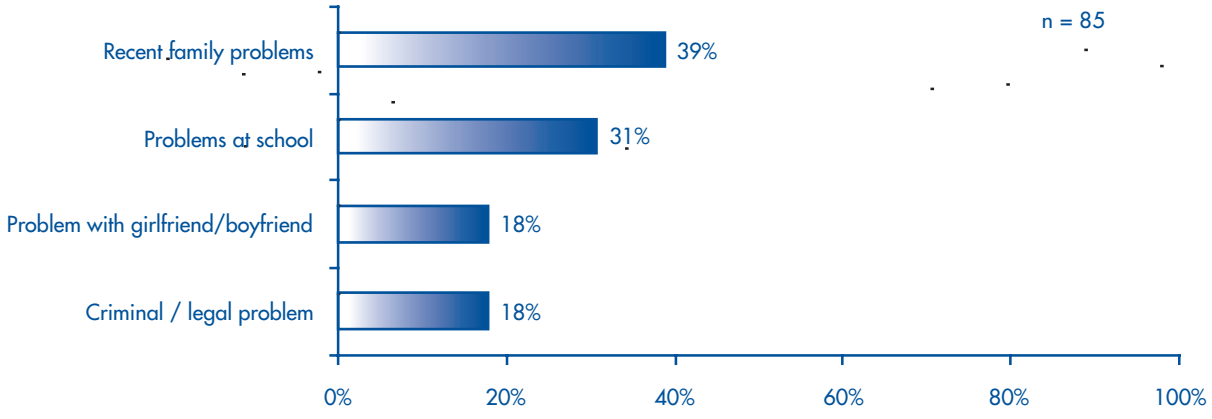
Teams considered most youths completing suicide (51%) to be of middle socio-economic status (SES). Of the remaining suicide completers, 26% were of low SES, and in 20% of the cases, SES was unknown.

Of the 44 firearm suicides reviewed, 40 youths accessed guns that were not stored in locked cabinets, and only two of the guns used were known to have had a trigger lock.

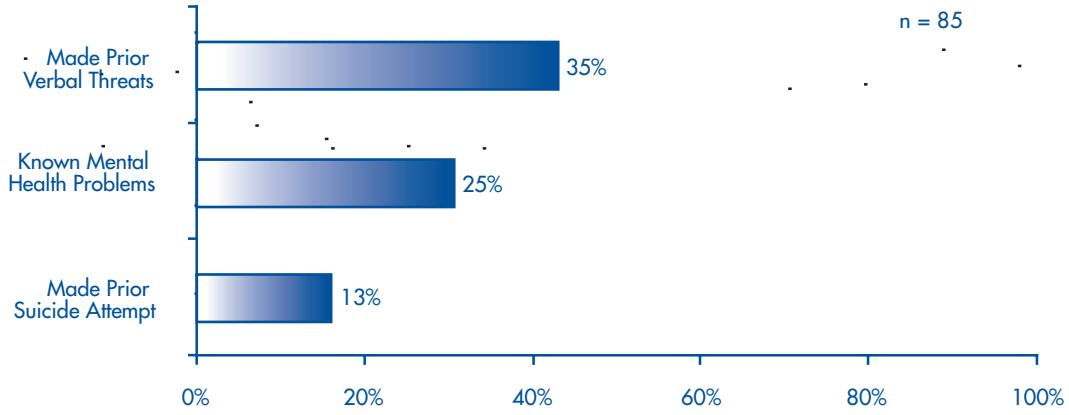
Often, a precipitating event can be identified as a factor that contributed to the suicide. Other suicides occur with no indication as to why it happened. As they reviewed the deaths, teams found that 38% of the suicides appeared to be completely unexpected.

A total of 15 youths (18%) had illegal drugs, alcohol or both in their systems at the time that they committed suicide.

Child Suicides Reviewed by Precipitating Event, 2002-2003



Child Suicides Reviewed by Risk Factors, 2002-2003



Recommendations Regarding Child Suicides

1. The Michigan Department of Community Health: Take the lead in collaborating with the Michigan Department of Education and Michigan Department of Human Services to support the development and implementation of a state suicide prevention plan.

2. The Office of the Governor: Support the State Mental Health Commission in addressing the access to services for youths at risk for suicide.

3. The Michigan Department of Community Health: Lead a collaboration between community mental health, the Michigan Health and Hospital Association and the Michigan Department of Education, to ensure that bereavement services are available to all children who have experienced the recent death of a family member or close friend.

4. The Michigan Department of Community Health: Ensure that parents, teachers and professionals in the fields of public and mental health, substance abuse and juvenile justice have an awareness of the risk factors of youth suicide and how to access intervention services by providing educational training and materials.

Undetermined Manner

Key Findings

In 2002 and 2003, death certificates recorded that 31 Michigan children died of undetermined manner. CDR teams reported reviewing 106 child deaths of undetermined manner in those two years. The main reasons for the discrepancy in numbers are: (1) manner of death is unavailable from Vital Records, so SIDS and other unexpected infant mortality are considered "Natural" manner under the cause of death coding rules of the National Center for Health Statistics, regardless of whether the local medical examiner called the manner "Undetermined"; and (2) death certificates may include additional information from the certifying physician or have been amended since the time that CDR teams conducted the review.

Of the 106 deaths reviewed due to undetermined manner: 50% were sleep related deaths to infants; 11% were overdoses; 9% were suspicious of child abuse or neglect; 8% were known to be self-inflicted, but intent was unclear; and 23% involved various other individual circumstances.

Recommendation Regarding Child Deaths of Undetermined Manner
[Note: this recommendation is also listed in the SIDS and Suffocation/Strangulation sections.]

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

The Fetal and Infant Mortality Review Process

Fetal and Infant Mortality Review (FIMR) teams provide an on-going community needs assessment with the goal of improving birth outcomes. The Michigan model of close collaboration between FIMR and CDR is nationally recognized. There are currently 14 FIMR teams in Michigan, which represents counties that have 68% of the infant mortality in the state.

The Michigan Department of Community Health (MDCH Title V) continues to support the FIMR teams with technical assistance and statistical and epidemiological information. Above all, the development of state support for local FIMR teams was designed to help improve birth outcomes in Michigan. Having experienced essentially no reduction in infant mortality since 1996, despite some continued reductions in other areas of the nation, Michigan is determined to improve this picture. The current Title V and five-year plan includes information gained from local FIMR findings and calls for continuation of this process.

Data are collected from a variety of sources prior to the review meeting. These may include prenatal care history, maternal hospitalizations, labor and delivery records, infant hospital records (pre and post discharge), well baby and sick baby visits, infant emergency department and hospital readmissions, DHS history, police records, support services such as WIC, MSS and ISS. An interview with the family, particularly the mother, is also conducted.

A de-identified case summary is then prepared and presented to the Community Review Team (CRT) by the local coordinator/facilitator, and each case is examined for the significant social, economic, public health, educational, environmental and safety issues related to the death. Team members capture issues associated with and contributing to the death while asking the questions:

- Did the family receive the services or community resources they needed?
- Are there gaps in the systems?
- What does this case tell us about how families use the existing local resources?
- What are the barriers to care?
- What are the trends in service delivery?
- What can be done to improve policies that affect families?

After thorough discussion and review, recommendations are formulated and passed on to the Community Action Team (CAT) for consideration and possible implementation.

Michigan Fetal and Infant Mortality Review Statistics

Local FIMR teams remain concerned about the number of infant deaths associated with less than adequate prenatal care, regardless of the cause of death. In 2002 and 2003 case reviews, 50% of moms entered care during their first trimester (the first 12 weeks of pregnancy), and fewer than one in three moms received "adequate" prenatal care (taking into account the necessary number of prenatal care visits based on Kessner's Index).

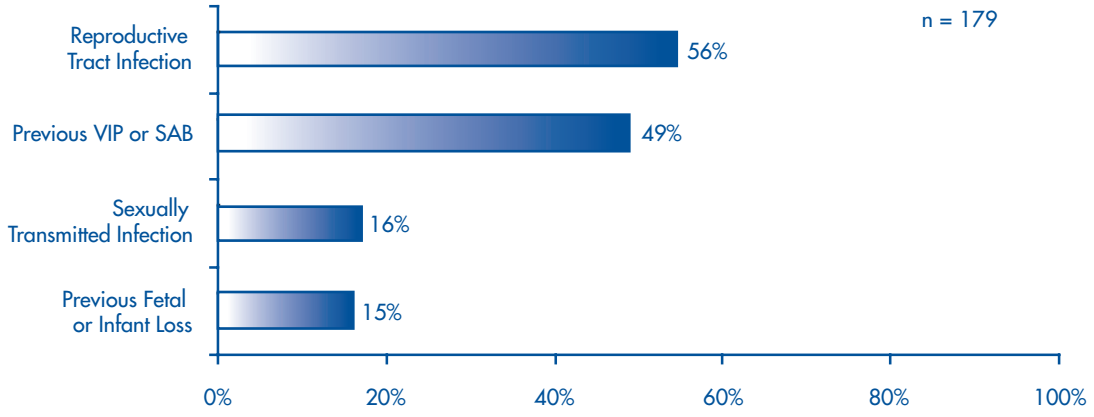
The majority of deaths reviewed by FIMR teams in 2002 and 2003 were neonatal deaths (68%), before the 28th day of life. Most of these neonatal deaths were related to complications caused by prematurity and low birth weight. FIMR teams collect information on multiple factors known to be highly associated with infant deaths due to prematurity.

Infections, such as bacterial vaginosis (BV) and sexually transmitted infections, are thought to pre-dispose a woman to preterm labor. Other events that may weaken the cervix, such as previous elective abortion,

spontaneous miscarriage, previous infant loss or stillbirth have been identified as risk factors for preterm delivery.

- Over half of the women had a reproductive tract infection (such as bacterial vaginosis or chorioamnionitis) or sexually transmitted disease.
- Nearly half of the women had had either a previous voluntary interruption of pregnancy (VIP) or a spontaneous miscarriage (SAB).
- Previous loss of either a live born or stillborn infant affected about one in seven of the women whose babies died due to prematurity.

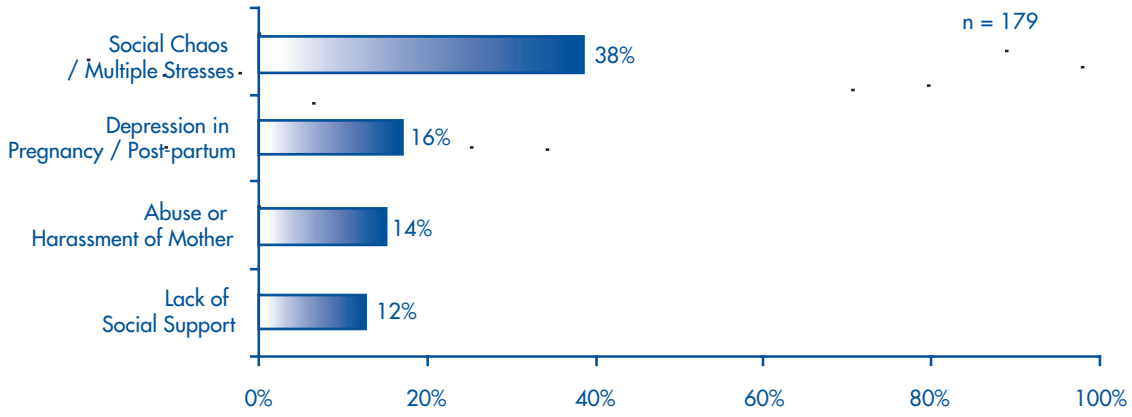
Infant Deaths From Prematurity Reviewed by Maternal Medical Conditions, 2002-2003



Poverty, stress and lack of social support have been emerging as factors that may play a role in predisposition to pre-term labor, especially for black women:

- One in eight women lacked social support from their families or communities.
- Depression or other mental illness during pregnancy was also a significant risk factor, occurring in one in six women.
- Over a third of women were identified as having multiple stressors or "social chaos" present in their lives.
- One in seven women suffered from abuse or harassment at some point in their lives.

Infant Deaths From Prematurity Reviewed by Maternal Psychosocial Factors, 2002-2003



Recommendations Regarding the FIMR Process

These recommendations have been reviewed and supported by the State FIMR Network for further consideration by the Michigan Department of Community Health.

1. Reinvest in outreach – restore outreach funding for public health programs to link women to health services.
   a. Expand indigenous paraprofessionals to identify and provide outreach to pregnant women and women with children under one year of age.
2. Pregnancy prevention and family planning – increase access to pregnancy prevention and family planning services as a primary prevention model.
   a. Address unintended pregnancy through exploration of the submission of a family planning 1115 waiver.
   b. Health education for women of childbearing age that includes information on nutrition, folic acid, and substance abuse.
3. Improve insurance options for adult non-pregnant women – any consideration for expanding health insurance programs should include preconception care for women who are not pregnant and of childbearing age (19-44 years).
4. Coordination of services – the state must assess its own programs, providing a state "mapping" of services that communities can then use to create a seamless system of care for women.
   a. Support the location of Women Infants and Children (WIC) services in complexes with doctor's offices and other centralized services.

Recommendations Regarding the FIMR Process Continued...

5. Expand services that enhance access for high-risk populations:
   a. Increase Federally Qualified Health Centers (FQHCs) in both Detroit and in the outstate region.
   b. Develop and implement standards of care for women's health care services similar to the Early and Periodic Screening Diagnosis and Treatment (EPSDT) model of care for children.
   c. Increase public and private investments in school-based and school-linked health services.
6. Encourage local community planning and collaboration – community planning and collaboration must be supported, developing culturally and geographically appropriate public and private services that are sensitive to the needs of that particular community.
   a. Partner with employers to expand pregnancy and parenting friendly policies in workplaces.
7. Collect and analyze data for infant mortality and maternal services:
   a. Continue to collect and analyze data from FIMR sites. Target the communities with the highest infant death rates and greatest racial disparities. Consider providing seed monies to new and developing teams. And, continue technical assistance to established review and community action teams.
   b. Implement a data collection system statewide for Maternal Support Services/Infant Support Services (MSS/ISS) that includes consistent assessment of client needs and services provided.
   c. Evaluate the Medicaid data to determine how infant mortality is impacted by barriers to access such as Medicaid reimbursement policies, transportation reimbursement and provider resources/availability.
   d. Collect data for the Maternal Morbidity Review process that focuses on prematurity, low birth weight and infant mortality including chronic diseases and behavioral factors such as the impact of stress and abuse of women of childbearing age and their families.

Child Deaths
IN MICHIGAN
section one

The Michigan Child Death Review PROCESS

Conducting a Local Review

Purpose

Child Death Review (CDR) brings together multidisciplinary groups of people to conduct comprehensive reviews of child deaths in order to identify the factors that may have contributed to the deaths. The reviews then motivate communities to take action in order to prevent other similar tragedies in the future.

Membership

There is no legislative mandate to participate on a review team, yet nearly 1,200 local professionals on 79 county teams demonstrate a tremendous volunteer commitment to the review process. Statute does require that where teams are established, they include at least the county medical examiner, the prosecuting attorney, a law enforcement officer and representatives from local public health and the county Department of Human Services. Most teams have even broader representation. The average team size is 15 members.

Table 1
Representation on Local Child Death Review Teams, 2002-2003

Agency	Number
Law Enforcement	307
Local Public Health	137
County Department of Human Services	118
Medical Examiners' Offices	113
County Prosecutors' Offices	109
Hospitals	101
Community Mental Health	53
Emergency Medical Services	48
Schools	42
Health Clinics and Physicians	37
Courts	30
Other Social Services	14
Community Collaboratives	13
Other Community Providers	11
Tribal Health/Social Services	7
Funeral Homes	6
Fire Departments	4
Churches	2
Hospice	1
Other	33
Total	**1,186**

Team Coordination

In every county, a team member volunteers to coordinate the team's activities. The role of the coordinator often includes selecting cases for team review, communicating with team members, coordinating and facilitating the meetings and completing case reports.

Table 2
Coordinator Representation on Local Child Death Review Teams, 2002-2003

Agency	Number
Local Public Health	25
County Department of Human Services	16
Medical Examiners' Offices	13
County Prosecutors' Offices	11
Law Enforcement	8
Community Collaboratives	4
Courts	3
Health Clinics and Physicians	2
Community Mental Health	2
Hospitals	2
Emergency Medical Services	1
Other Social Services	1
Other	1
Total	**89**

There are no state program funds supporting the local coordinator activities. In some cases, the role of coordinator is shared. Many coordinators have served their teams since they were established. Annual meetings are held for coordinators at regional locations throughout the state.

Cases Selected for Review

The teams attempt to review all deaths of children under the age of 19, with the exception of the largest counties in Michigan (Genesee, Ingham, Kent, Macomb, Muskegon, Oakland and Wayne). Because of their high numbers of child deaths, these teams select cases that fall under the jurisdiction of the medical examiner for their reviews. These include sudden and unexpected deaths, accidents, homicides and suicides.

Teams often find it difficult to review natural infant deaths, because the maternal and perinatal health histories are often not available and the cases tend to be more medically complex. Fourteen Michigan communities conduct more intensive reviews of infant deaths through the Michigan Fetal and Infant Mortality Review (FIMR) program described in Section Nine of this report.

In 2002 and 2003, 69 counties conducted child death reviews. Of the 14 counties not conducting reviews, half had five or less child deaths occur in the two-year period.

Access to Information for an Effective Review

The Office of the State Registrar, Division for Vital Records and Health Statistics at the Michigan Department of Community Health (MDCH) has facilitated a process that enables teams to more readily obtain notification of their child deaths, especially those occurring in counties other than the county of residence. Counties that border other states still find it difficult to obtain information from those states in a timely manner.

The 1997 legislation for CDR provides teams the authority to meet and requires that the meetings are

confidential, but it does not address access to records. Many teams continue to report difficulty in gaining access to the information necessary for a complete and quality review, especially health and medical information on the child or the mother regarding a perinatal death. Much of the information missing in this report is due to team members' inability to gather and/or share information. Twenty-one county teams also reported that confidentiality concerns prevented them from exchanging information.

Since the Health Insurance Portability and Accountability Act of 1996 (HIPAA) was enacted, some CDR team members have become wary of sharing information at review meetings. Fortunately, the Privacy Rule includes a number of provisions for public responsibilities where the privacy rights of the individual must be balanced against larger social purposes. Public health is one of those purposes, so there is explicit language that allows covered entities to justify disclosing data for use in public health activities.

Michigan's CDR is a surveillance system as well as an investigation and intervention designed to achieve a clear public health goal. Thus, it meets the second criterion from the Privacy Rule's public health activities exception. This means that covered entities may disclose protected health information to the CDR team for use in the review without obtaining authorization from the parents.

At the Review

An effective review begins with all participants sharing relevant information from their agencies regarding the circumstances surrounding the child's death. Team members ask for clarification as needed. The team discusses each death, considering the following questions:

- Is the investigation comprehensive and complete?
- Are there services we should be providing?
- Are there other children at imminent or serious risk of harm?
- What were the risk factors involved in the death?
- Are there agency policies and practices that should be changed?
- What action are we going to take locally to prevent another death?
- Who should take the lead to implement our recommendations?
- What recommendations should we make to the state?

State Support

The Michigan Department of Human Services provides funding to the Michigan Public Health Institute (MPHI) to manage the CDR program. This funding supports the following:

Technical Assistance, Consultation and Training for Local Teams

Staff regularly attend local review team meetings, assist teams in identifying deaths, facilitate access to information and organize and facilitate effective meetings. Staff provide follow-up materials and support to the teams as well as resources on death investigation, services, prevention and procurement of information on specific causes of deaths. CDR staff manage the reporting system and assist counties in utilizing the online database.

The 8th annual CDR Team Member Training was held in May 2004. One hundred thirty- nine team members attended. Currently, 32% of team members have attended this annual two-day training event. All of the trainers are Michigan experts in areas related to child fatalities.

The Child Death Review Reporting System

As local teams conduct reviews, they also complete a confidential case report on each death. This information is entered into a secured Web-based system. Findings are then aggregated and shared with the State Advisory

Team and form the basis for this report. When appropriate, and in accordance with state statute, general findings from the local teams are also shared with the public.

Starting in 2005, Michigan's CDR program will be part of a multi-state pilot project utilizing a new reporting tool. It was developed by the National Maternal Child Health Center for Child Death Review, along with assistance from many professionals from around the country. Analysis with this in-depth tool will provide an even clearer picture of how and why children are dying.

Linking Local Programs, State and Other Resources

CDR has worked closely with MDCH in implementing the FIMR program. This has helped to ensure that all communities with FIMR and CDR work together to encourage and enhance prevention efforts in communities with high infant mortality rates and/or racial disparities.

In 1995, CDR, the Michigan State Police, the Michigan Association of Medical Examiners, the Michigan SIDS Alliance, the Prosecuting Attorneys Association of Michigan and MDCH worked with a number of other state and local organizations to develop the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths*. These protocols have been endorsed and distributed throughout the state. They are now a required standard for death investigations in a growing number of counties. CDR continues to make the protocols available, supports training for investigators and encourages their use.

The program has collaborated with a number of other state programs to encourage and support local and state prevention initiatives. Collaborations have occurred with the SAFE KIDS Campaign, the Children's Trust Fund, Tomorrow's Child (formerly Michigan SIDS Alliance) and the Michigan State Police Office of Highway Safety Planning. CDR reports regularly to the Governor's Task Force on Children's Justice.

Support for Local Prevention Efforts

CDR staff work closely with communities in identifying prevention strategies, designing programs, and locating resources to implement these strategies. Communities are encouraged to share information on successful prevention efforts with other CDR teams. Examples of prevention strategies that have been implemented can be found in every section of this report.

State Advisory Team

The Michigan Child Death State Advisory Committee is a multidisciplinary committee that was formed by Public Act 167 of 1997 to identify and make recommendations on policy and statutory changes pertaining to child fatalities and to guide statewide prevention, education and training efforts. It is required to publish these annual reports on child fatalities, based on the compilation of death data reported by the state registrar, as well as data received from the county level child death review teams across the state. This report is the first to cover two years' worth of data in one report.

The team is comprised of professionals around the state involved in the health, safety and protection of children. This team met eight times during 2002 and 2003. The team used some of the time in these meetings to review past recommendations of the committee, in order to determine if any action had been taken on those issues. Appendix C contains a listing of these recommendation updates. Examples include:

- The Michigan Department of Community Health, the Michigan Department of Human Services, Michigan State Police, Chiefs of Police, Michigan Sheriff's Association, Michigan Association of Medical Examiners and Prosecuting Attorneys Association should collaborate to ensure statewide utilization of Michigan standards for child death scene investigations using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model. (from 4th annual report; similar recommendation in 2nd annual report)
  Update: As of 7/1/ 2004, Public Act 179 states, in part, "The Department of Community Health shall

promulgate rules and regulations under this act to promote consistency and accuracy among county medical examiners and deputy county medical examiners in determining the cause of death under this section. The department may adopt, by reference in its rules, all or any part of the "State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths" published by the Michigan Child Death Review program." MDCH is currently convening a multi-disciplinary group to advise them on the best way to move forward with this law.

- Develop a statewide campaign on safe infant sleeping environments following the recommendations of the Consumer Product Safety Commission, and include a special focus on babysitters and child care providers. (from 2nd annual report)
  Update: MDCH is currently in collaboration with MDHS, Tomorrow's Child, CDR and local community reps to develop a statewide campaign on safe infant sleep.

- The Michigan Department of Human Services should increase and improve the resources available to educate and support the medical community and other mandated reporters to understand, identify and report suspected child abuse and/or neglect. (from 4th annual report)
  Update: A new guide for mandated reporters has been developed at MDHS. It will serve as a tool to identify, educate and encourage reporting by mandated reporters, as well as outline the civil duty and process for reporting. Specialized training for the reporting process is currently available through the Medical Services Advisory and Prosecuting Attorneys Association of Michigan.

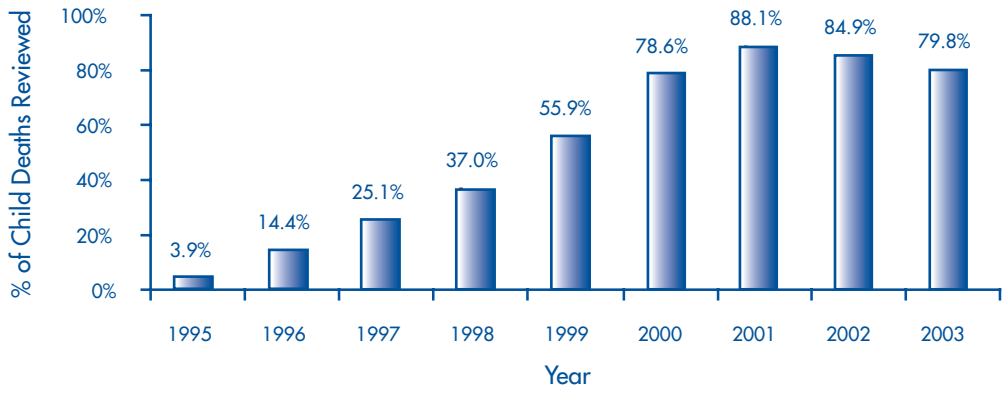
The National Center for Child Death Review

The Michigan CDR program is recognized as a national model because of its focus on reviewing all deaths and its emphasis on prevention. In 2002, the U.S. Department of Health and Human Services, Maternal and Child Health (MCH) Bureau awarded MPHI a grant to establish and administer the National MCH Center for Child Death Review. As a result, MPHI, including Michigan CDR program staff, are providing national leadership in promoting CDR to states and national organizations. The National Center has provided technical assistance and training to more than 35 states, developed a national CDR reporting system that is being piloted by a number of states in 2005, developed national standards for the CDR process and is working with federal agencies and other national organizations to link CDR to national child health and safety initiatives.

Review Outcomes

Since 2000, local CDR Teams have reviewed roughly half of all child deaths occurring in the State of Michigan. A much higher percentage of unintentional injury and violent deaths have been reviewed than of natural deaths. Since prevention efforts most often focus on injury and violence, it is important to capture details on as many of these types of deaths as possible. The Healthy People 2010 Report from the U.S. Department of Health and Human Services has an objective of extending all states' child death reviews to include 100% of child deaths from external causes.

Figure 1
Percent of Non-Natural Child Deaths in Michigan Reviewed by Local CDR Teams*



* Child death reviews conducted in 2004 will continue to review some deaths that occurred in previous years.

Comments from Local Teams Regarding the CDR Process

Antrim – Process is organized, forms easy to use.

Arenac – Information from meetings is shared with collaborative bodies such as Strong Families Safe Children and Child Protection Council. At this time, a work group is being planned for a community baby pantry through our Child Protection Council after initial discussion at a CDR meeting.

Barry – It gives CDR and member agencies an overall view of areas of concern in our county.

Branch – We are hopeful that our county will be taking "the next step" and getting active with prevention initiatives.

Charlevoix – At the very least, it brings pertinent issues to the attention of the community leaders.

Huron – Huron County stats are minimal, but contribute to the "big picture" nationally.

Monroe – The team approach brings several disciplines to the table to discuss what is going on in our county regarding child deaths.

Muskegon – If it weren't for our coordinator's plea to do something about our drowning numbers, the Water Safety Committee would not have been formed, which has come up with numerous activities to help with public awareness.

Oakland – The CDR process is absolutely vital to preventing future child deaths. The key to success is membership on the team of individuals experienced in handling child deaths from different perspectives, who are committed to active participation in the review process. We are in a unique position to make a real difference by studying each child death to identify dangerous patterns and practices, the first step in preventing similar future tragedies.

Ontonagon – It facilitates communication and awareness of community problems with agencies that are able to effect change.

Ottawa – We have been involved in day care safety in the past, as well as pond safety around apartment complexes. I believe that has had an impact on reducing child deaths. Although we weren't directly involved in the RIPTIDE group, I believe that will be effective as well in raising public awareness.

St. Clair – It forces us to look at all deaths of children, detecting patterns that need to be addressed; e.g., water safety, fire safety, car seat, safe sleep, etc. and the best ways to implement a plan locally. Often times those recommendations are passed through our local multi-purpose collaborative body to initiate programs.

Tuscola – The process assists in the prevention of something happening to a younger sibling. It helped get more stop signs in the county. It helped get awareness out on SIDS and the importance of the "Back to Sleep" program.

Recommendations for Policymakers

1. Michigan Legislature: Ensure continued and enhanced resources to support the comprehensive review of Child Death Review (CDR) findings and trends, enhance local prevention efforts and training for CDR team members.

2. The Michigan Department of Community Health: Consider establishment of a state-based regional medical examiner system.

Child Deaths
IN MICHIGAN
section two

Special Issues in Child Deaths

Special Issues in Child Deaths

This annual report presents mortality data and CDR team findings based on cause of death. Most of these causes are fairly easily categorized: motor vehicle crashes, drownings, etc. There are, however, two types of child deaths that currently pose unique challenges. This section highlights the special issues involved in deaths to infants in sleep environments and child abuse and neglect fatalities.

Infant Deaths in Sleep Environments

A national debate is ongoing in medical, legal and human services circles regarding the diagnoses that are assigned to infants who die suddenly and unexpectedly in sleep situations. During the past several decades, the diagnosis of SIDS was usually made in these deaths when the autopsies and medical histories found no probable medical cause. The nationally recognized definition of SIDS is the death of an infant under one year of age which remains unexplained after a thorough autopsy, review of the medical history and death scene investigation have been conducted.

In the past ten years, there has been a national effort to improve the quality of death scene investigations in these cases. As a result, better information is available on the circumstances surrounding these types of deaths and on the sleep environments. These include:

- The sleeping location, including cribs, adult beds, couches or chairs.
- The infants' sleep position when found, including prone or supine sleeping.
- The types of bedding used in the sleep environments, such as soft mattresses, thick or heavy blankets, pillows or stuffed toys.
- Whether or not the infant was sharing a sleep surface with others, including parents or siblings.

Those responsible for determining manner and cause of death are now more likely to include the scene findings in making their determinations. The ongoing debate relates to how to categorize these sudden and unexpected infant deaths when there are positive scene findings: is the death due to SIDS, accidental suffocation or should the manner and cause be classified as undetermined? As yet, there is still no agreement and no consistency in practice among medical examiners and coroners around the country. Thus, infants who die suddenly and unexpectedly during sleep will be represented in mortality statistics in all three areas: SIDS, suffocations and undetermined.

From a prevention perspective, how these deaths should be classified is eclipsed by the fact that these infants share the same or similar risk factors in their sleep environments.

This section presents an overview of the risk factors in all of the reviews of infants who died suddenly and unexpectedly while sleeping. It includes the following (as stated on the official death certificate):

- 105 SIDS deaths
- 94 infant suffocation deaths
- 54 infant deaths of undetermined manner (and often cause)

The following information highlights the fact that many of the same risk factors were present and points to the need for effective interventions to prevent these deaths.

Sleeping Location

Current recommendations from the Consumer Product Safety Commission (CPSC) on infant sleeping environments include placing babies to sleep on firm, tight-fitting mattresses in cribs that meet current safety standards. Research has shown that babies are at higher risk of dying suddenly and unexpectedly when placed to sleep on other surfaces, such as adult beds, couches or waterbeds.

The reviews found that most babies were not sleeping in cribs at the time of their deaths. The majority (69%) of these babies died in unsafe sleeping locations, and overall only 16% were sleeping in cribs.

Table 3
Number and Percent of Infant Sleep Location by Official Cause, 2002-2003

Sleeping Location	SIDS		Suffocation		Undetermined	
	Number	Percent	Number	Percent	Number	Percent
Crib	24	22.9	8	8.5	8	14.8
Port-a-Crib / Playpen	8	7.6	5	5.3	6	11.1
Bassinette	6	5.7	4	4.3	4	7.4
Adult Bed / Waterbed	36	34.3	56	59.6	24	44.4
Couch / Recliner	16	15.2	18	19.1	5	9.3
Other	13	12.4	2	2.1	4	7.4
Unknown	2	1.9	1	1.1	3	5.6
Total	**105**	**100.0**	**94**	**100.0**	**54**	**100.0**

Sleep Position

It has been ten years since the American Academy of Pediatrics and the National Institutes of Health launched the campaign to encourage caregivers to place babies on their backs as a way to reduce the risk of SIDS. Since the "Back to Sleep" campaign began, the SIDS rate in Michigan decreased from 1.21 per 1,000 live births in 1994 to 0.66 in 2001. However, the "Back to Sleep" message appears to have not been as effective in reaching non-white populations.

Unfortunately, the current CDR case report does not include data elements on sleep position for infants who die from suffocation or undetermined manner. However, for the SIDS deaths reviewed, the teams found that only 32% of the infants were reported to have been found sleeping on their backs.

Table 4
Number and Percent of SIDS Deaths Reviewed by Sleeping Position when Found, 2002-2003

Sleeping Position	2002		2003	
	Number	Percent	Number	Percent
Stomach	27	43.5	15	34.9
Back	20	32.3	14	32.6
Side	5	8.1	8	18.6
Unknown	10	16.1	6	14.0
Total	**62**	**100.0**	**43**	**100.0**

Bedding

The CPSC recommends that safe infant bedding requires that caregivers:

- Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.
- Use a sleep sack as an alternative to blankets.
- Do not place babies on a soft mattress, pillow or other soft surface to sleep.

CDR teams reported that almost half of all the infants that died suddenly and unexpectedly were sleeping in heavy or overly soft bedding:

Table 5
Number and Percent of Infants in Heavy/Soft Bedding by Official Cause, 2002-2003

Official Cause	Infant in Heavy/Soft Bedding	
	Number	Percent
SIDS	52	49.5 of SIDS
Suffocation	45	47.9 of Suffocations
Undetermined	25	46.3 of Undetermined
Total	**122**	**-**

Bed-sharing

The CPSC advises that the only safe place for a baby to sleep is in a crib. Sharing a sleep surface with adults or other children introduces the risk of overlay. People sleeping with the baby, especially exhausted new parents, may not wake up if they roll over onto the baby during sleep. This risk is increased if the person sleeping with the baby is under the influence of alcohol or other drugs.

If the infant's torso is compressed under another person, their chest cannot expand and therefore the baby cannot breathe, even if their head remains uncovered. Another possibility is that the baby's face may become pressed into the other person's body, thereby restricting their airway. These two types of suffocation death are often called positional and/or compressional asphyxia.

In 72% of the suffocation deaths, the infants were sleeping with others. Even in the SIDS deaths, over one third of the infants were not sleeping alone:

Table 6
Number and Percent of Infants Bed-Sharing by Official Cause, 2002-2003

Official Cause	Infant Bed-Sharing	
	Number	Percent
SIDS	36	34.3 of SIDS
Suffocation	68	72.3 of Suffocations
Undetermined	28	51.9 of Undetermined
Total	**132**	–

Summary

For 2002 and 2003, teams reviewed the deaths of 253 babies who died suddenly and unexpectedly in their sleep. Only 46 of these babies were sleeping in cribs; 122 were found in heavy or soft bedding and 132 were sharing sleep surfaces with others. Some of these infants may have been exposed to all three risk factors.

While discussions will no doubt continue regarding the diagnosis of these types of deaths, it is important to recognize the tremendous impact of unsafe sleeping environments. Reducing the numbers of these tragedies will not occur without addressing the risk factors involved.

In all, nearly 200 more deaths to infants from SIDS, suffocations and undetermined causes in sleeping environments were reviewed than to infants who died from all other types of accidents and homicides combined (55). Since most of the risk factors involved in infant sleeping deaths are easily modifiable, these high numbers of deaths can only be seen as unacceptable, and should serve as a call to action at every level.

Under-Counting of Child Abuse and Neglect

Fatal child abuse or neglect is the fatal physical injury or negligent treatment of a child by a person who is responsible for the child's welfare. The actual number of abuse and neglect deaths is estimated to be much higher than what is reported by death certificate data. For example, in Michigan in 2002, 12 child maltreatment deaths were reported by vital statistics from death certificate data, yet the Michigan Department of Human Services (MDHS) reported 52 abuse and neglect deaths to the National Child Abuse and Neglect Data System (NCANDS) for that year.

A study published in Pediatrics (2002) that reviewed nine years of children's death certificates estimated that about half of child abuse and neglect deaths are not coded consistently on death certificates. This study reports that neglect is the most under-reported form of fatal maltreatment. There are a number of explanations for the under-reporting of child abuse and neglect, including:

- Physical abuse deaths may be coded as manner homicide, but the cause is not coded specifically as child abuse because the perpetrator is not listed on the death certificate.
- Neglect deaths may be coded as manner natural, for example due to malnutrition, hyperthermia or infectious disease.
- Some deaths may be coded as accidents, even though grossly negligent acts (or failures to act) on the part of caregivers contributed to the death.
- Deaths may have been poorly investigated and the child abuse or neglect went undetected.

In Michigan, abuse and neglect deaths can best be identified by combining four different sources:

- Death certificate data.
- Case reports submitted to state MDHS by local DHS agencies, of all deaths known of children in the system. This is known as the *Report of Minor's Death*.
- Child Death Review Case Reports.
- Uniform Crime and Homicide reports submitted by local law enforcement to the Michigan State Police (MSP).

In coordination with CDR, Michigan has taken a number of steps to develop a system to better identify all child abuse and neglect deaths and to improve our understanding of the circumstances leading to these deaths. These steps included:

1. The Michigan Child Maltreatment Surveillance Project:

In 2001, Michigan was one of five states awarded a grant by the CDC to develop a better method to count fatal maltreatment. Based at MPHI, this project was a collaborative effort with MDHS, MDCH, MSP and MPHI. The project focused on child maltreatment deaths in 1999-2001.

A project workgroup identified potential abuse and neglect cases from the four sources listed above. Work group members conducted intensive case reviews on every death identified by at least one source.

The group found that no one source identified all of the deaths, and that only by cross-referencing cases could an accurate count be completed. The project found that:

- The CDR process identified the largest number of both abuse and neglect deaths, followed by the MDHS reports.
- Crime and Homicide reports identify most abuse deaths, but no neglect.
- Death certificates were the least accurate method for determining if abuse or neglect was involved in the fatality.
- Cases categorized as accidental on the death certificate accounted for over 60% of the neglect deaths identified by the project.
- An in-depth review of cases from all four sources is the best method to identify all deaths.
- The rate of maltreatment fatality was higher for children living below 185% of the poverty line.

2. The MDHS Citizen Review Panel on Child Fatalities

In 1999, the United States Congress, through the Child Abuse Prevention and Treatment Act (CAPTA), mandated the formation of three panels for the purpose of providing an opportunity for citizens to aid in ensuring that states meet goals of protecting children from abuse and neglect by evaluating the strengths, weaknesses and challenges in the child welfare delivery system. The Citizen Review Panel (CRP) on Child Fatalities was formed in Michigan as a sub-committee of the Child Death State Advisory Team.

The CRP meets quarterly to examine cases of child abuse and neglect that have occurred within a given year. The review of fatal child maltreatment cases is a multi-step process that involves the identification of cases, the collection of case-relevant materials and a thorough case abstraction. The cases for 1999-2001 were identified through the work of the Michigan Child Maltreatment Surveillance Project, as described above, using all four sources for records. The same methodology was used for 2002 cases and is being used to identify deaths from 2003.

The CRP conducts a comprehensive case review of each fatality, and makes recommendations in a formal written report to the director of MDHS. It was through the work of the CRP that MDHS was able to identify the total of 52 child maltreatment deaths that it reported to NCANDS for 2002.

3. Electronic Report of Minor's Death

The new Child Death web report was developed to record a child fatality that is reported to the MDHS, Children's Protective Services (CPS). The report contains a set of data fields linked to the CPS data system. These fields were incorporated into the design of the new CPS child welfare information system. This report provides MDHS with the capability to correctly identify child maltreatment fatalities in CPS data systems without extensive case reading. It also allows for the analysis of these cases across any data variable available. Additionally, an e-mail tickler alert was added to expedite the exchange between workers and administration, of the information gathered during these investigations. Over time, as deaths are recorded in this manner, trends across any variable collected will be easy to identify. Furthermore, appropriate analysis of these data trends will assist MDHS in developing prevention initiatives for children and families.

It is known from the *Michigan Child Maltreatment Surveillance Project* and other research that the child death review process can be considered one of the best methods for identifying maltreatment fatalities. And yet, even CDR did not identify all of the maltreatment deaths in Michigan in 2001 and 2002.

As stated earlier, in 2002, there were 52 cases of fatal child maltreatment identified by combining reports from the four data sources, and then studied by the CRP. CDR teams had reviewed only 39 of these cases. However, even though the teams reviewed these 39 deaths, only 16 were reported by the teams to be due to abuse and neglect. The following table describes what the teams reported the causes of death to be:

Table 7
Cause and Manner of the Deaths as Reported by CDR Teams (2002-2003), Known to be Child Maltreatment Deaths through the Citizen Review Panel Process in 2002*

Manner and Cause of Death	Number
Natural	2
< 1 Year, excluding SIDS	1
> 1 Year, excluding SIDS	0
SIDS	1
Accident (Unintentional)	13
Motor Vehicle	3
Suffocation or Strangulation	2
Fire and Burn	2
Drowning	2
Firearm and Weapon	2
Other	2
Homicide	20
Firearm and Weapon	1
Child Abuse and Neglect	16
Other	3
Suicide	0
Undetermined	4
Total	**39**

(*Child maltreatment deaths identified by CRP for the year 2003 will not be reviewed by CRP until 2005, therefore, the data cannot be included in this report.)

While CDR teams may not have determined that maltreatment was the primary cause of death in over half of these cases (23), they did identify child abuse and neglect as a contributing factor to the death in eight of those cases.

When these cases are studied in the CRP process, it becomes apparent that deaths due to neglect are often not identified by the child death review process.

A Better Picture of Child Abuse and Neglect Deaths in Michigan

The 52 cases of maltreatment deaths identified for Michigan in 2002, have been determined to be the best available picture of child abuse and neglect because it incorporates multiple data sources for identification. These cases are profiled below. Maltreatment deaths identified solely through the CDR process can be found later in this report, under *Section 6: Homicide—Child Abuse and Neglect.*

Table 8
Michigan Child Maltreatment Deaths by Sex and Age, 2002

Sex and Age Group	2002	
	Number	Percent
Male	29	55.8
Under One Year	13	25.0
1 to 4 Years	12	23.1
5 to 18 Years	4	7.7
Female	23	44.2
Under One Year	15	28.8
1 to 4 Years	6	11.5
5 to 18 Years	2	3.8
Total	**52**	**100.0**

Table 9
Michigan Child Maltreatment Deaths by Race and Sex, 2002

Race and Sex	2002	
	Number	Percent
White	23	44.2
Male	16	30.8
Female	8	15.4
Black	28	53.8
Male	13	25.0
Female	15	28.8
Total	**52**	**100.0**

Table 10
Michigan Child Maltreatment Deaths by Person Who Inflicted Injury, 2002

Perpetrator	2002	
	Number	Percent
Mom	27	51.9
Dad	7	13.5
Parent's Partner	7	13.5
Both Parents	4	7.7
Other Relative	3	5.8
Parent and Parent's Partner	2	3.8
Step Parent	1	1.9
Foster/Adoptive Parent	1	1.9
Total	**52**	**100.0**

Child Deaths
IN MICHIGAN
section three

A Summary of Michigan Child Mortality Data and Child Death Review Team FINDINGS

A Note on the Data Used in this Report

There are two types of data presented in this report: *Michigan Mortality Data from Death Certificates* and *Child Death Review Team Findings*. The purpose for presenting child death data in this manner is to provide an overview of all child deaths using the *Michigan Mortality Data from Death Certificates* and then "drilling-down" to more specific issues surrounding those deaths using the *Child Death Review Team Findings*.

Michigan Mortality Data from Death Certificates are the official count of child deaths in Michigan from death certificates completed at the county level and submitted to the Division for Vital Records and Health Statistics, Office of the State Registrar at the Michigan Department of Community Health (MDCH). Included in this data are children ages 0 to 18, who died in the State of Michigan in a particular year. Vital Records continues to update the *Michigan Resident Death File* with changes and late additions after the year is completed; therefore, the numbers presented in this report may differ slightly from those published on the MDCH website. Mortality rates were calculated using age- and race-specific population estimates from the U.S. Census Bureau. Child mortality rates were computed as the number of child deaths per 100,000 population in a specified age group. Infant mortality rates were computed as the number of infant deaths ages 0 to 12 months per 1,000 live births.

Child Death Review Team Findings are compiled from *CDR Case Reports*. These reports were completed by local Child Death Review teams during the review of a child's death, and compiled at the CDR state office. Included in this data are children whose death was reviewed by a local team in a particular year. Deaths are not always reviewed in the year of occurrence, especially when the death occurs late in the year. Therefore, *Child Death Review Team Findings* from 2002 will include deaths from previous years, and some 2002 deaths will be included in the 2003 review findings.

Since the two types of data track different cohorts, the reader is cautioned not to make direct one-to-one comparisons between the *Michigan Mortality Data from Death Certificates* numbers and the *Child Death Review Team Findings* numbers.

Table 11
Number and Percent of Child Deaths Reviewed by Year of Death

Year of Death	Year of Review			
	2002		2003	
	Number	Percent	Number	Percent
1996	0	0.0	1	0.1
1997	0	0.0	0	0.0
1998	2	0.2	0	0.0
1999	0	0.0	0	0.0
2000	20	2.2	1	0.1
2001	229	25.5	21	2.5
2002	648	72.1	200	24.2
2003	–	–	605	73.1
Total	**899**	**100.0**	**828**	**100.0**

Michigan Child Mortality:
Summary of 1990-2003 Data from Death Certificates

Figure 2
Michigan Child Deaths, Ages 0-18, 1990-2003

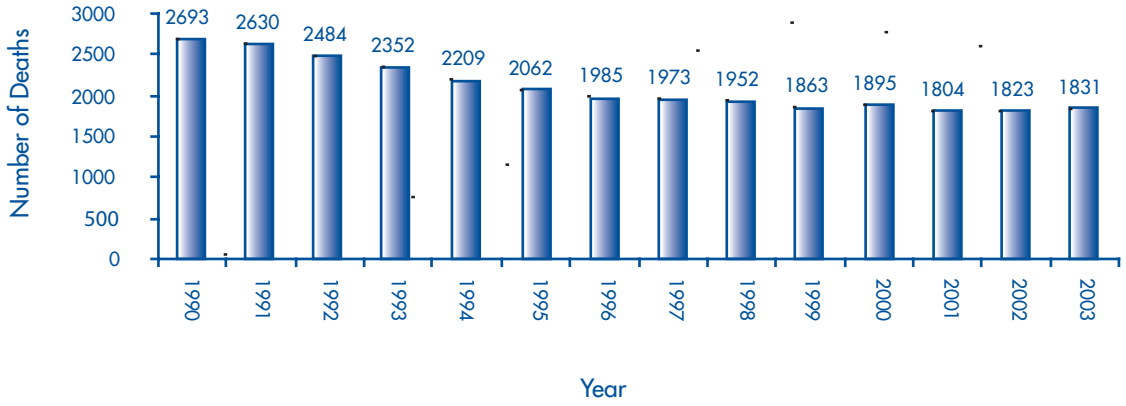


Figure 3
Michigan Child Death Rates, Ages 0-18, 1990-2003

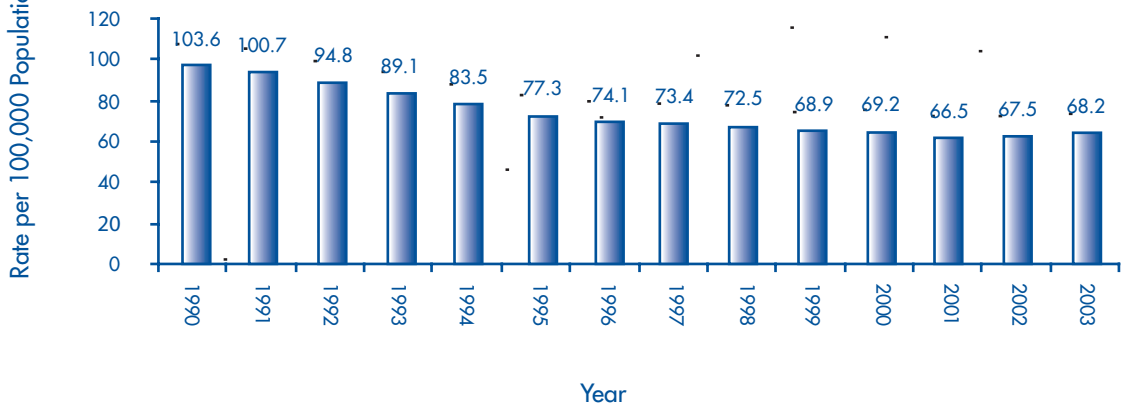
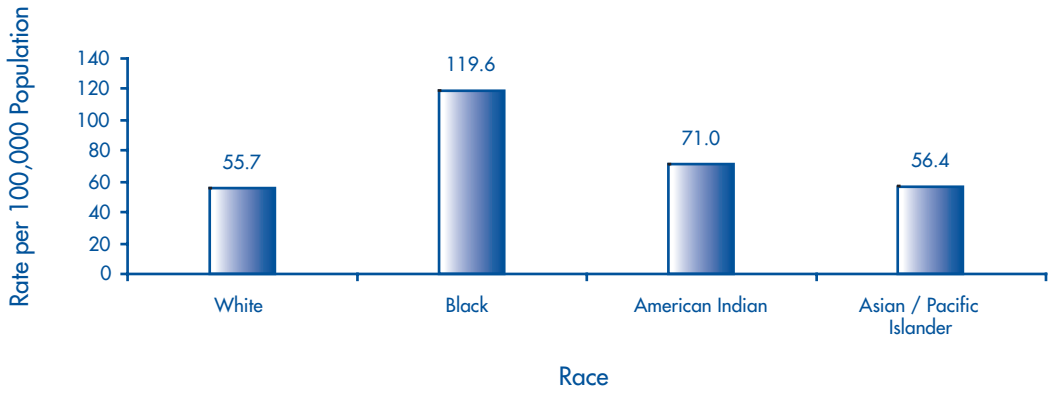


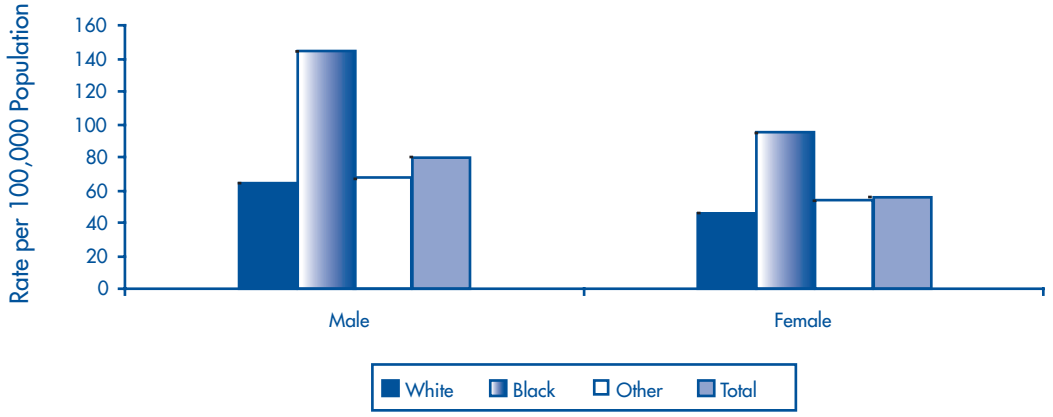
Figure 4
Michigan Child Death Rates by Race, Ages 0-18, 2003



Black children continue to die at a disproportionate rate compared to other children. In 2003, black children had a death rate 2.1 times that of white children. The good news is that mortality for black children has declined 47% since 1990, which is more rapid than the decline in mortality for white children (29%).

In 2003, roughly seven percent of Michigan's child mortality was to children with Hispanic/Latino ethnicity, which is a death rate of 88.9 per 100,000 population. This is a 24% increase in mortality for Hispanic/Latino children since 1990, for a population that has nearly doubled in that time.

Figure 5
Michigan Child Death Rates by Sex and Race, Ages 0-18, 2003

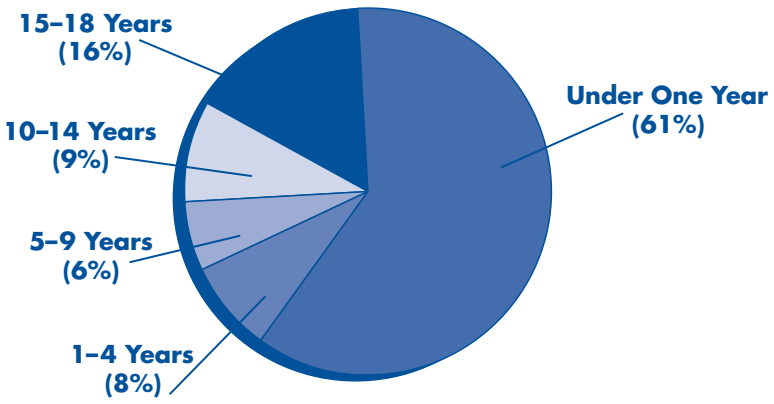


Males continue to die at a higher rate than females; black males in particular have the highest rate of death. In 2003, males had a death rate 1.4 times that of females. Mortality for both males and females has declined 34% since 1990.

Table 12
Number and Percent of Michigan Child Deaths by Manner and Cause, 2002-2003

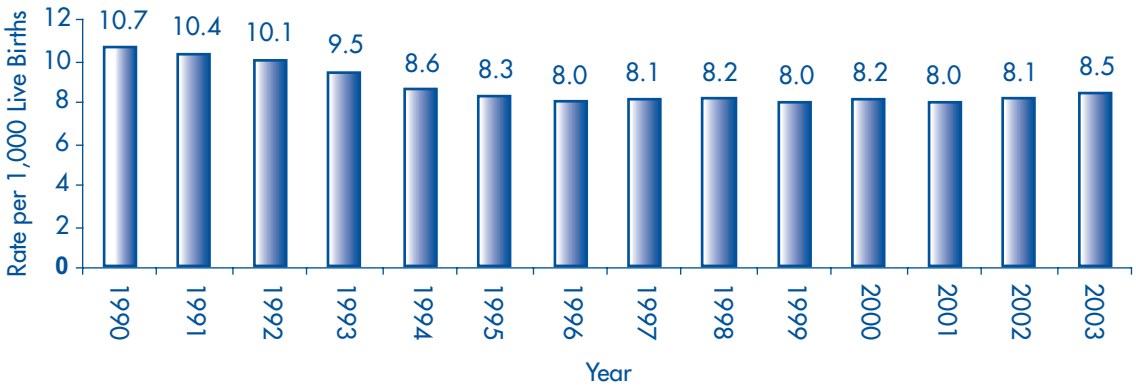
Manner and Cause of Death	2002		2003	
	Number	Percent	Number	Percent
Natural	1292	70.9	1325	72.4
Perinatal Conditions	575	44.5	628	47.4
Congenital Anomalies	224	17.3	232	17.5
SIDS	85	6.6	49	3.7
Neoplasms	79	6.1	74	5.6
Nervous System Diseases	71	5.5	75	5.7
Circulatory System Diseases	51	3.9	66	5.0
Respiratory System Diseases	44	3.4	63	4.8
All Other Natural Causes	163	12.6	138	10.4
Accident (Unintentional)	385	21.1	377	20.6
Motor Vehicle	217	11.9	215	11.7
Suffocation or Strangulation	62	3.4	58	3.2
Fire and Burn	34	1.9	41	2.2
Drowning	37	2.0	36	2.0
Firearm and Weapon	4	0.2	2	0.1
All Other Accidents	31	1.7	25	1.4
Homicide	80	4.4	67	3.7
Firearm and Weapon	52	2.9	40	2.2
Child Abuse and Neglect	12	0.7	6	0.3
All Other Homicides	16	0.9	21	1.1
Suicide	50	2.7	47	2.6
Firearm and Weapon	28	1.5	19	1.0
Suffocation or Strangulation	19	1.0	23	1.3
All Other Suicides	3	0.2	5	0.3
Undetermined	16	0.9	15	0.8
Total	**1823**	**100.0**	**1831**	**100.0**

Figure 6
Michigan Child Deaths by Age Group, Ages 0-18, 2003



Infant Deaths (Ages 0-1)

Figure 7
Michigan Infant Death Rates, Ages 0-1, 1990-2003



Michigan had 1,054 infant deaths in 2002 and 1,112 infant deaths in 2003. Infant mortality rates are calculated by the number of infants that died in a year per 1,000 live births; rather than per 100,000 population for other age groups. While the birth rate increased one percent between 2002 and 2003, the infant death rate increased five percent. However, the infant death rate is still 21% less than it was in 1990.

Of the deaths to infants in 2003, 69% occurred during the neonatal period (within the first 28 days of life). The increase in the infant death rate in 2003 is due to an increase in neonatal period deaths. The postneonatal death rate (between 29 and 364 days of age) remained the same from 2002 to 2003.

While the decline in infant mortality since 1990 was similar for black infants (19%) and white infants (15%), substantial racial disparities remain. In 2003, black infants had a death rate 2.6 times that of white infants, which is a larger gap than the disparities that exist for all children aged 0-18 years.

Figure 8
Michigan Infant Deaths by Manner, Ages 0-1, 2003

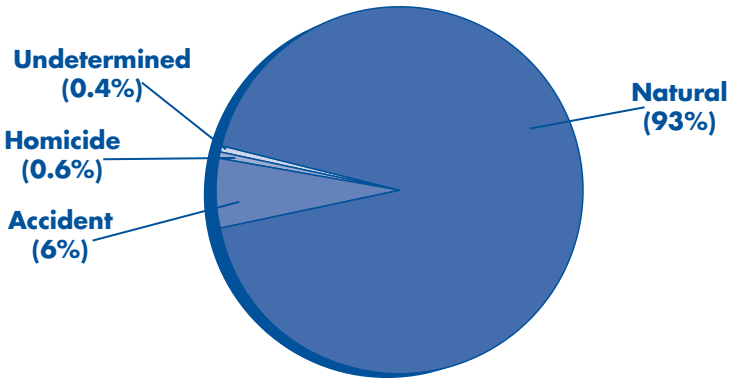
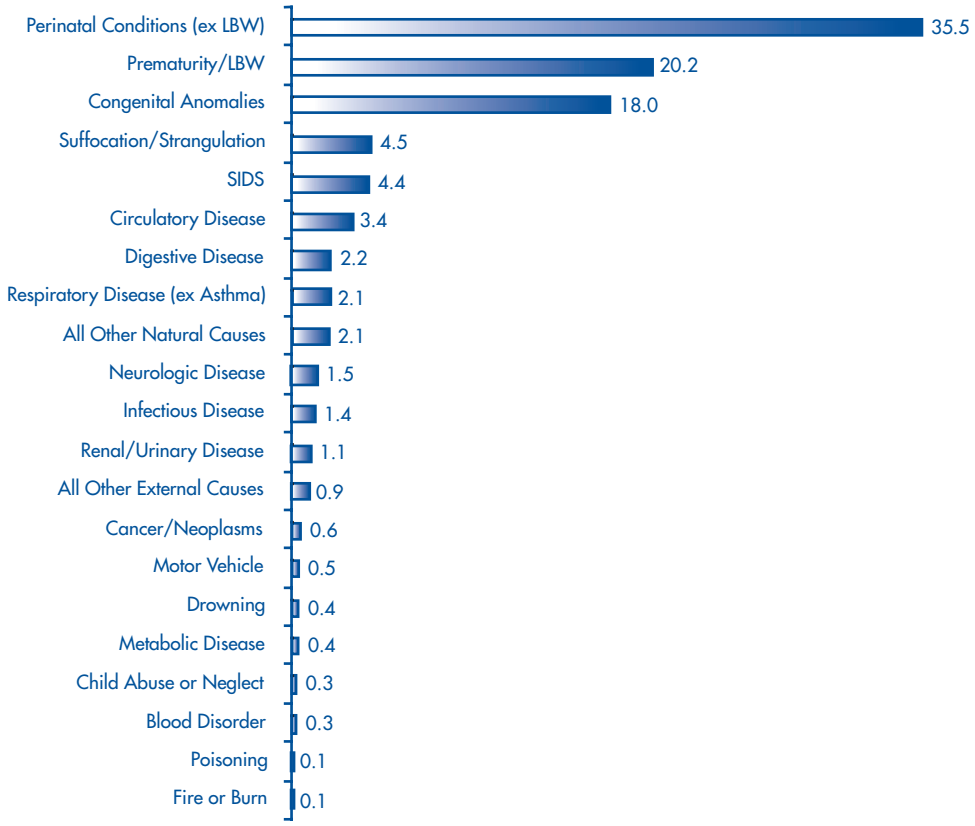


Figure 9
Percent Causes of Michigan Infant Deaths, Ages 0-1, 2003



Child Deaths (Ages 1-18)

Figure 10
Michigan Child Death Rates, Ages 1-18, 1990-2003

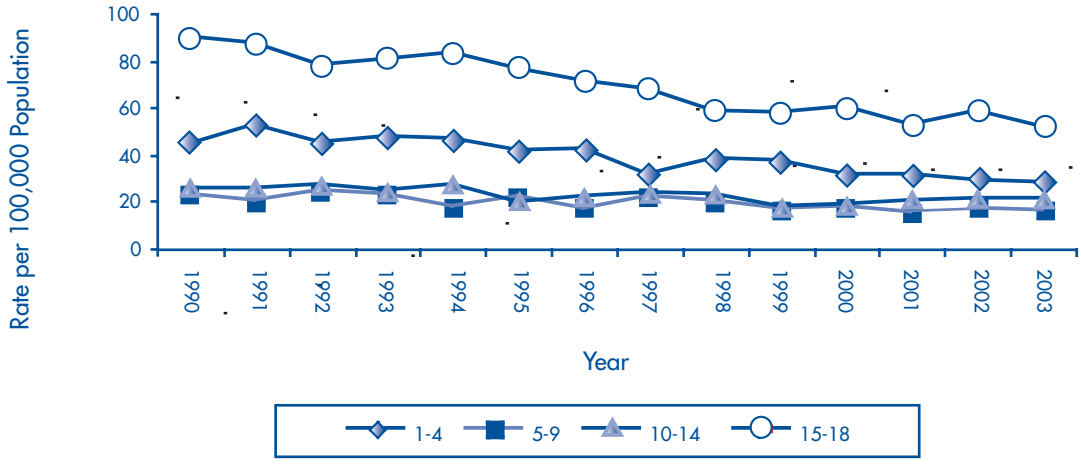


Table 13
Michigan Child Death Rate and Percent Decline, Ages 1-18

Age Group	Rate in 2002	Rate in 2003	Percent Decline Since 1990
1-4 Years	28.6	27.6	37.7
5-9 Years	17.1	16.2	28.3
10-14 Years	21.0	21.1	16.9
15-18 Years	58.1	51.5	42.8

The large decline for 15-18 year olds can be attributed primarily to the dramatic drop in the homicide rate for this age group, which has decreased 75% since 1990.

Figure 11
Michigan Child Deaths by Manner, Ages 1-4, 2003

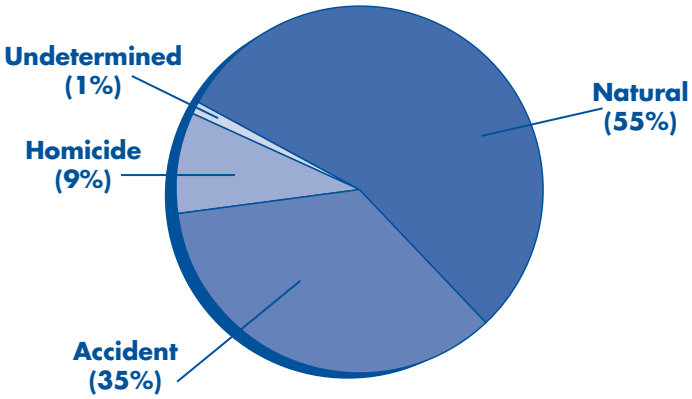


Figure 12
Percent Causes of Michigan Child Deaths, Ages 1-4, 2003

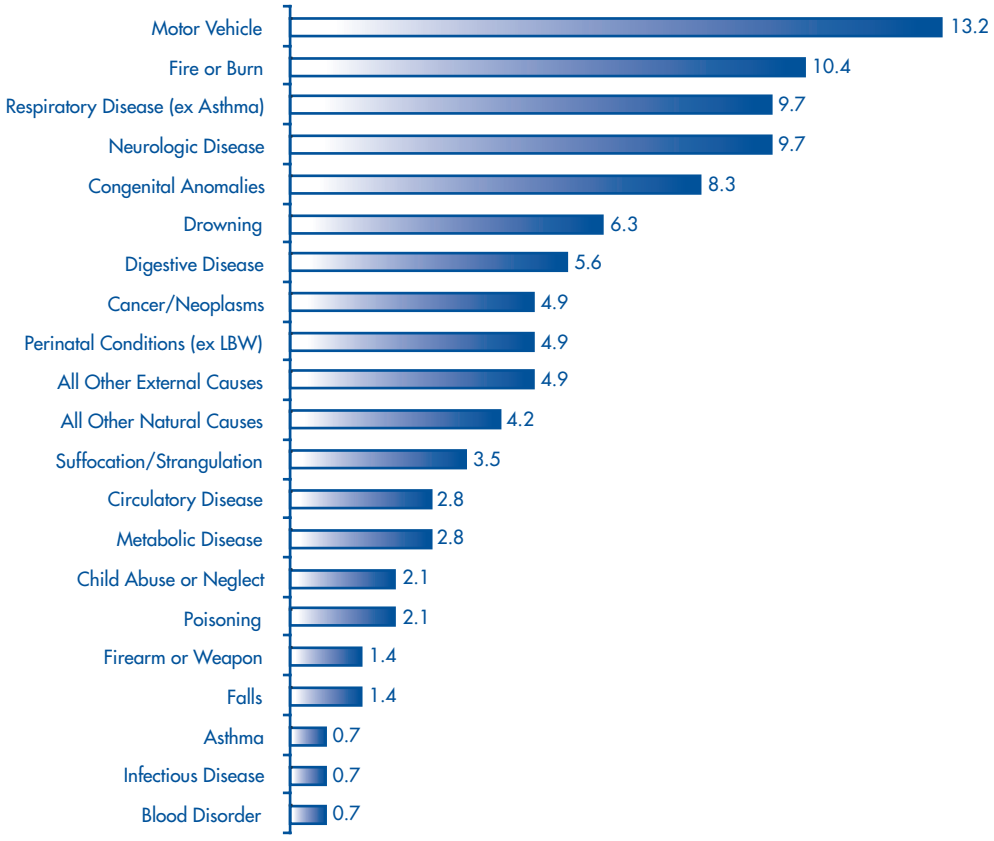


Figure 13
Michigan Child Deaths by Manner, Ages 5-9, 2003

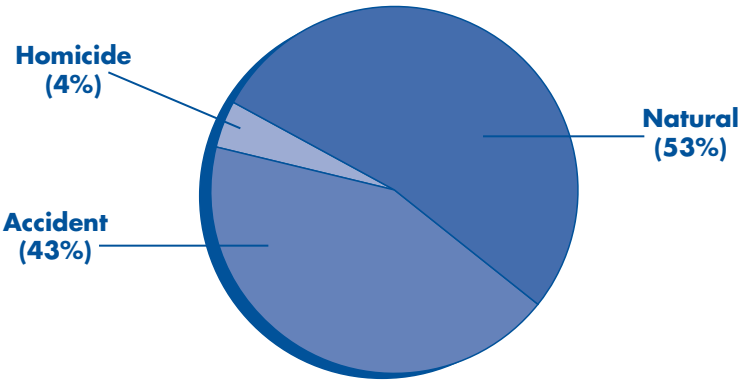


Figure 14
Percent Causes of Michigan Child Deaths, Ages 5-9, 2003

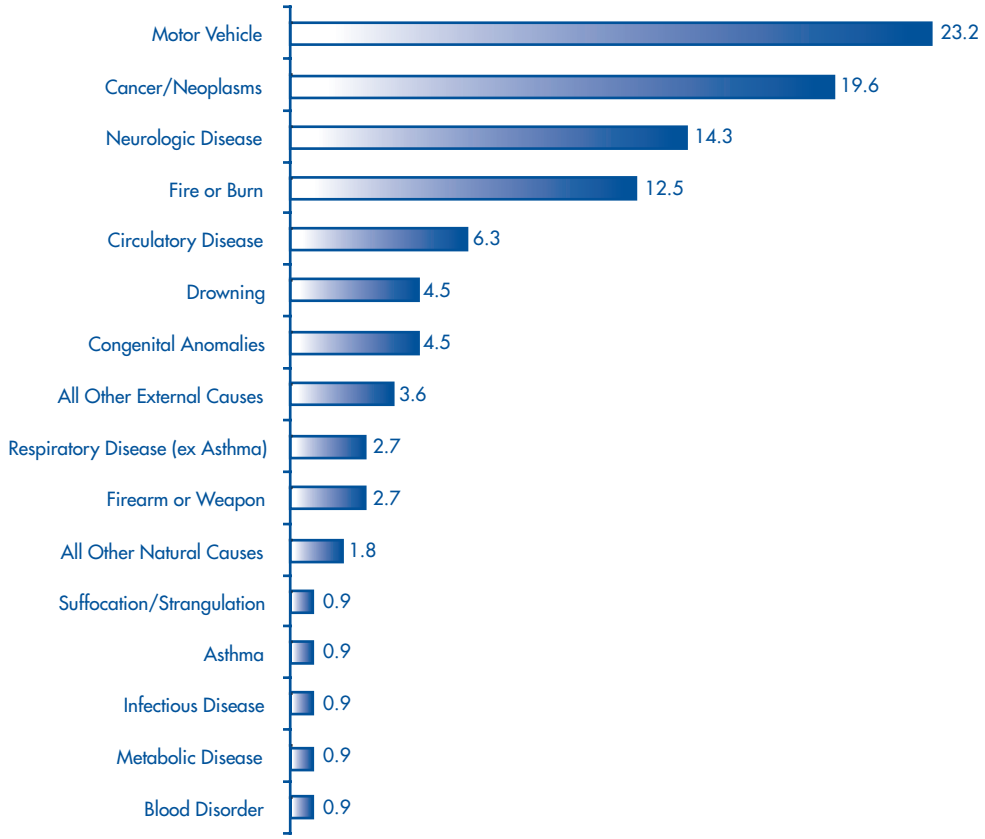


Figure 15
Michigan Child Deaths by Manner, Ages 10-14, 2003

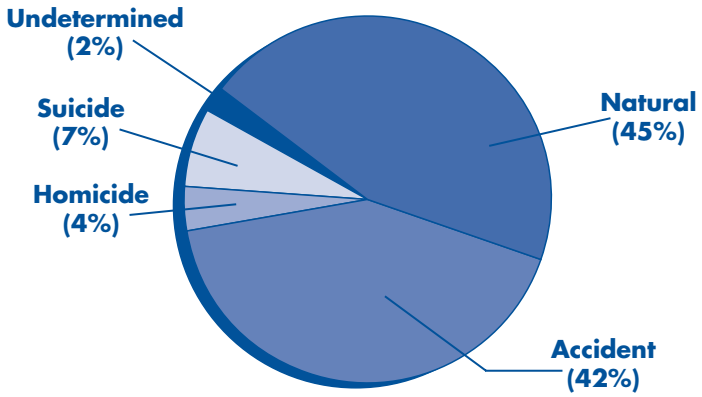


Figure 16
Percent Causes of Michigan Child Deaths, Ages 10-14, 2003

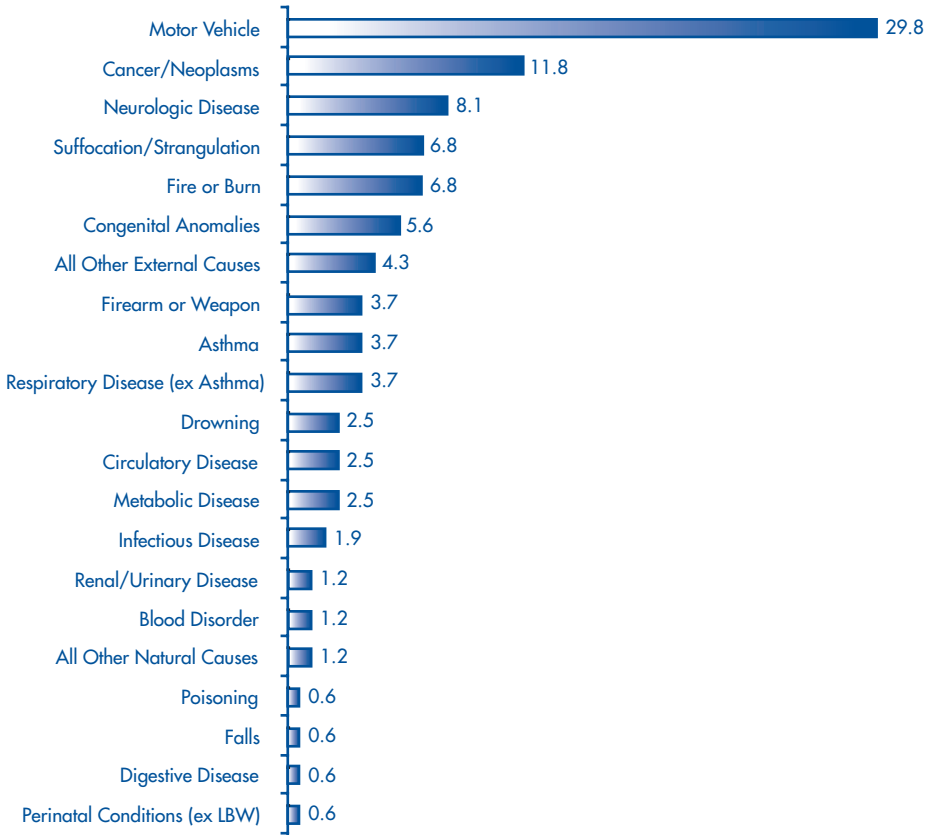


Figure 17
Michigan Child Deaths by Manner, Ages 15-18, 2003

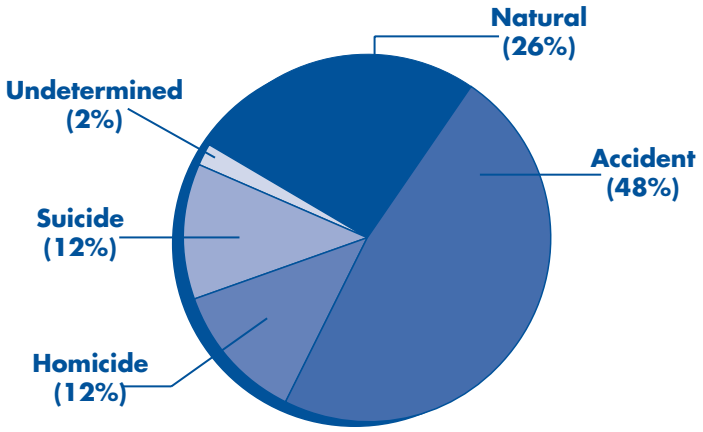
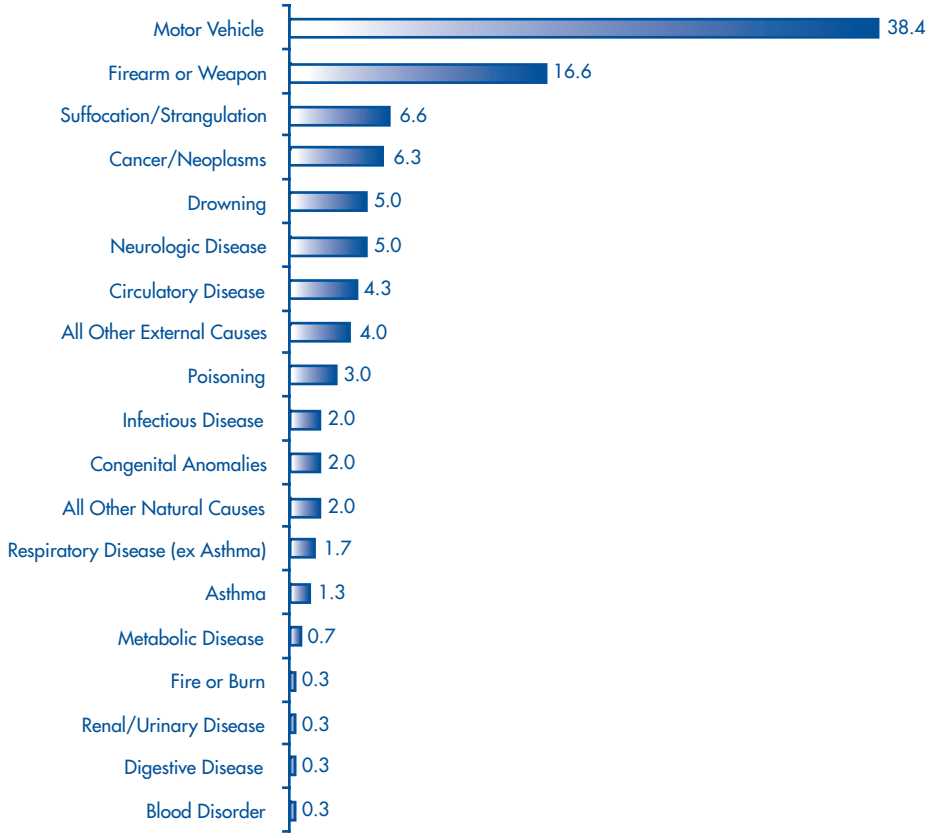


Figure 18
Percent Causes of Michigan Child Deaths, Ages 15-18, 2003



Michigan Child Death Review: Summary of 2002 and 2003 Findings

Since the inception of the Michigan CDR program, teams have reviewed more than 4,800 cases. This report covers over 1,700 cases reviewed in 2002 and 2003.

Table 14
Number of Child Death Reviews by Year

Year of Review	Number
1995	3
1996	130
1997	201
1998	492
1999	601
2000	807
2001	885
2002	899
2003	828
Total	**4,846**

Table 15
Number and Percent of Child Deaths Reviewed by Manner and Cause

Manner and Cause of Death	2002		2003	
	Number	Percent	Number	Percent
Natural	400	44.5	365	44.1
< 1 Year, excluding SIDS	217	24.1	213	25.7
> 1 Year, excluding SIDS	121	13.5	109	13.2
SIDS	62	6.9	43	5.2
Accident (Unintentional)	348	38.7	288	34.8
Motor Vehicle	185	20.6	152	18.4
Suffocation or Strangulation	67	7.5	50	6.0
Fire and Burn	35	3.9	36	4.3
Drowning	38	4.2	26	3.1
Firearm and Weapon	4	0.4	2	0.2
All Other Accidents	19	2.1	22	2.7
Homicide	58	6.5	77	9.3
Firearm and Weapon	29	3.2	47	5.7
Child Abuse and Neglect	20	2.2	22	2.6
All Other Homicides	9	1.0	8	1.0
Suicide	39	4.3	46	5.6
Firearm and Weapon	22	2.4	22	2.7
Suffocation or Strangulation	14	1.6	22	2.7
All Other Suicides	3	0.3	2	0.2
Undetermined	54	6.0	52	6.3
Total	**899**	**100.0**	**828**	**100.0**

Table 16
Number and Percent of Child Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	570	63.4	527	63.6
Under One Year	237	26.4	204	24.6
1 to 4 Years	67	7.5	64	7.7
5 to 9 Years	36	4.0	36	4.3
10 to 14 Years	74	8.2	66	8.0
15 to 18 Years	148	16.5	153	18.5
19 to 21 Years	8	0.9	4	0.5
Female	328	36.5	301	36.3
Under One Year	169	18.8	148	17.9
1 to 4 Years	36	4.0	38	4.6
5 to 9 Years	25	2.8	26	3.1
10 to 14 Years	33	3.7	27	3.3
15 to 18 Years	63	7.0	57	6.9
19 to 21 Years	2	0.2	5	0.6
Unknown	1	0.1	0	0.0
Total	**899**	**100.0**	**828**	**100.0**

Table 17
Number and Percent of Child Deaths Reviewed by Race

Race	2002		2003	
	Number	Percent	Number	Percent
White	567	63.1	537	64.9
Black	278	30.9	244	29.5
American Indian	3	0.3	7	0.8
Asian / Pacific Islander	14	1.5	13	1.6
Multi-racial	29	3.2	25	3.0
Unknown	1	0.1	2	0.2
Total	**899**	**100.0**	**828**	**100.0**

Table 18
Number and Percent of Child Deaths Reviewed by Socio-Economic Status*

SES	2002		2003	
	Number	Percent	Number	Percent
High	15	1.7	15	1.8
Middle	269	29.9	254	30.7
Low	414	46.1	362	43.7
Unknown	201	22.4	197	23.8
Total	**899**	**100.0**	**828**	**100.0**

* A subjective item, determined by teams

Table 19
Number and Percent of Child Deaths Reviewed by Factors that Contributed to Death

Factors	2002		2003	
	Number	Percent	Number	Percent
Lack of Supervision	84	9.3	61	7.4
Alcohol	71	7.9	39	4.7
Drugs	44	4.9	35	4.2
Neglect	41	4.6	33	4.0
Child Abuse	27	3.0	20	2.4
Domestic Violence	15	1.7	19	2.3

Prior Child Protective Services (CPS) involvement with the family is a variable that is discussed in review meetings. Teams found that there were a total of 396 (23%) cases in which the family was involved in CPS either at the time of death or any time previous to the death. In 238 (60%) of the CPS cases, the involvement was with the child. In 117 (30%) of the CPS cases, there was prior contact with another family member. The point of contact was unknown in the remaining CPS cases.

Table 20
Number and Percent of Preventable Deaths Reviewed by Manner and Cause

Manner and Cause of Death	2002		2003	
	Number	Percent	Number	Percent
Natural	61	15.3	61	16.7
< 1 Year, excluding SIDS	19	8.8	24	11.3
> 1 Year, excluding SIDS	15	12.4	21	19.3
SIDS	27	43.5	16	37.2
Accident (Unintentional)	328	94.3	260	90.3
Motor Vehicle	174	94.1	141	92.8
Suffocation or Strangulation	62	92.5	46	92.0
Fire and Burn	32	91.4	33	91.7
Drowning	37	97.4	23	88.5
Firearm and Weapon	4	100.0	2	100.0
All Other Accidents	19	100.0	15	68.2
Homicide	53	91.4	61	79.2
Firearm and Weapon	26	89.7	35	74.5
Child Abuse and Neglect	19	95.0	21	95.5
All Other Homicides	8	88.9	5	62.5
Suicide	23	59.0	32	69.6
Firearm and Weapon	14	63.6	16	72.7
Suffocation or Strangulation	6	42.9	16	72.7
All Other Suicides	3	100.0	0	0.0
Undetermined	37	68.5	37	71.2
Total	**502**	**55.8**	**451**	**54.5**

Michigan's CDR program operates on a model that is focused on obtaining information that will drive prevention efforts. A death is deemed preventable if an individual or group could reasonably have done something that would have changed the circumstances leading to the death. Local teams found that over 50% of all the deaths reviewed in 2002 and 2003 were preventable.

Table 21
Number and Percent of Preventable Deaths Reviewed by Age of Child

Age Group	2002		2003	
	Number	Percent	Number	Percent
Under One Year	156	38.3	119	33.8
1 to 4 Years	60	58.3	63	61.8
5 to 9 Years	35	57.4	42	67.7
10 to 14 Years	71	66.4	62	66.7
15 to 18 Years	171	81.0	157	74.8
19 to 21 Years	9	90.0	8	88.9
Total	**502**	**55.8**	**451**	**54.5**

Teams more readily identify the deaths of older children and teens as being preventable.

Table 22
Number of Prevention Actions Proposed and Initiated by Teams

Action	2002		2003		1995–2003*	
	Proposed	Initiated	Proposed	Initiated	Proposed	Initiated
Advocacy	18	5	18	6	83	36
Legislation, Law or Ordinance	12	4	9	0	88	35
Community Safety Project	38	14	27	13	223	99
Product Safety Action	9	3	3	0	42	23
Education in Schools	39	22	62	36	303	170
Education through the Media	95	63	113	81	480	312
Public Forums	5	5	35	28	86	56
New Services	3	2	2	1	44	21
Change in Agency Practice	34	15	29	10	170	61
Other Program or Activity	38	13	29	18	248	122
Total	**291**	**146**	**327**	**193**	**1,767**	**935**

* CDR teams began reporting advocacy actions in 1999.

A total of 618 prevention actions were proposed as a result of team reviews in 2002 and 2003. At the time of this report, 339 (55%) of them were known to have been initiated.


Keeping
Kids
Alive©

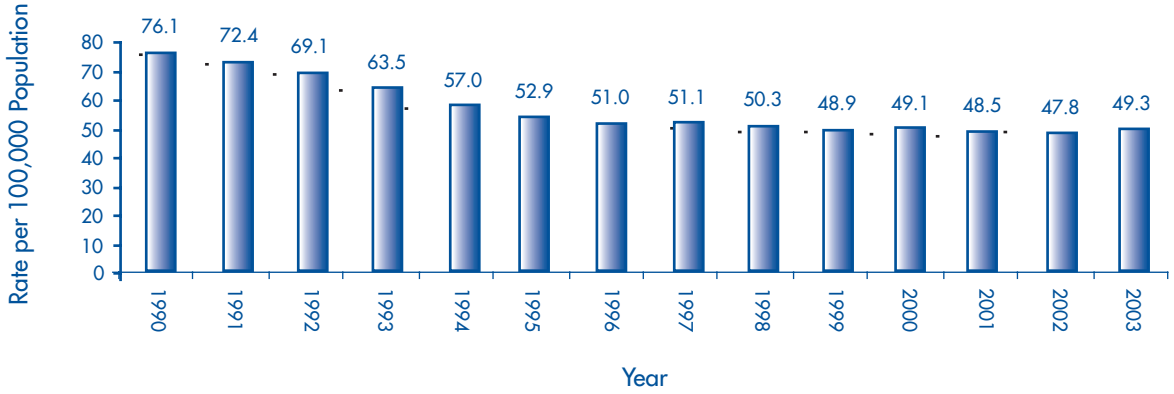
Child Deaths
IN MICHIGAN
section four

Natural DEATHS

Overview of Natural Child Deaths, Ages 0-18

Michigan Mortality Data from Death Certificates

Figure 19
Michigan Natural Child Death Rates, Ages 0-18, 1990-2003

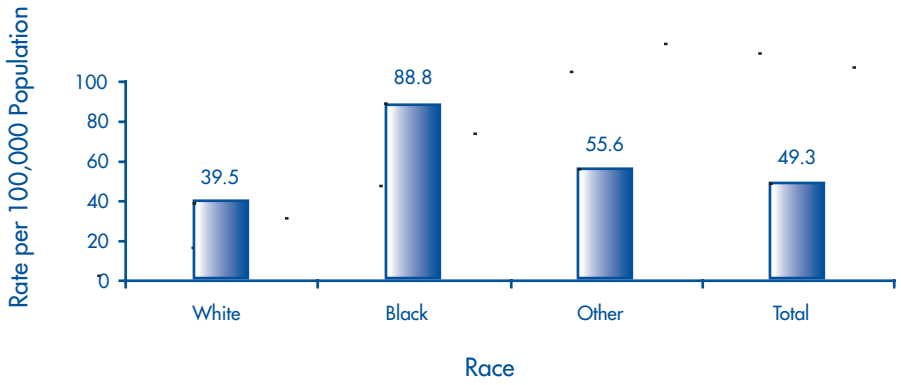


Note: The rate of 47.8 in 2002 represents 1,292 deaths; the 49.3 in 2003 represents 1,325 deaths.

Table 23
Number and Percent of Michigan Natural Child Deaths by Sex and Age, Ages 0-18

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	715	55.3	758	57.2
Under One Year	527	40.8	593	44.8
1 to 4 Years	52	4.0	45	3.4
5 to 9 Years	36	2.8	29	2.2
10 to 14 Years	44	3.4	39	2.9
15 to 18 Years	56	4.3	52	3.9
Female	574	44.4	566	42.7
Under One Year	438	33.9	443	33.4
1 to 4 Years	33	2.6	34	2.6
5 to 9 Years	32	2.5	29	2.2
10 to 14 Years	29	2.2	33	2.5
15 to 18 Years	42	3.3	27	2.0
Unknown	3	0.3	1	0.1
Total	**1292**	**100.0**	**1325**	**100.0**

Figure 20
Michigan Natural Child Death Rates by Race, Ages 0-18, 2003



Natural Infant Deaths Excluding SIDS, Ages 0-1

Background

Prematurity and low birth weight continue to be the greatest predictors of infant mortality. Preterm refers to births occurring before the 37th week of pregnancy, and low birth weight infants are those weighing less than 2500 grams or 5 $^{1/2}$ pounds at birth. While vast improvements have been made in treating these infants, preventing babies from being born too early and too small is still a great challenge.

In 2002, there were 15,510 preterm births in Michigan, representing 11.9% of all live births. Between 1992 and 2002, the rate of infants born preterm in Michigan increased more than 10%. The rate of preterm birth in Michigan is highest for black infants (18.4%), followed by Native Americans (12.5%), Hispanics (11.0%), whites (10.3%) and Asians (9.2%). Compared with singleton births (one baby), multiple births (twins, triplets and higher) in Michigan were about six times as likely to be preterm in 2002.

There are still many gaps in our understanding of why some women go into labor well ahead of schedule. Risk factors for preterm birth and low birth weight include: previous preterm birth and/or low birth weight infant, multiple birth, smoking, unplanned pregnancy and poor nutrition. Certain pregnancy complications such as high blood pressure and diabetes increase the risk of prematurity. Other significant risks are genital tract infections (including sexually transmitted diseases), stress, anxiety, depression and other psychological factors. Recent studies are looking at the long-term effects of stress over time and even inter-generational factors contributing to preterm delivery and low birth weight.

Preconception care helps to ensure that a woman is in optimal health before getting pregnant. Attention to nutrition, healthy weight and use of tobacco, alcohol and drugs improves the chance for a healthy birth outcome. Early access to quality prenatal care, including health promotion, risk assessment and appropriate interventions can also have an impact on preventing preterm births and increase the odds for an infant having normal birth weight.

According to the 2000 Pregnancy Risk Assessment Monitoring (PRAMS) data, the overall prevalence of unintended pregnancies in Michigan was 41%. For births to mothers on Medicaid, this rises to 66%. Unintended pregnancy rates are highest for black women, teens between the ages of 13 – 17 years, women with less than a high school diploma, unmarried women and women with an annual household income of $10,000 or less.

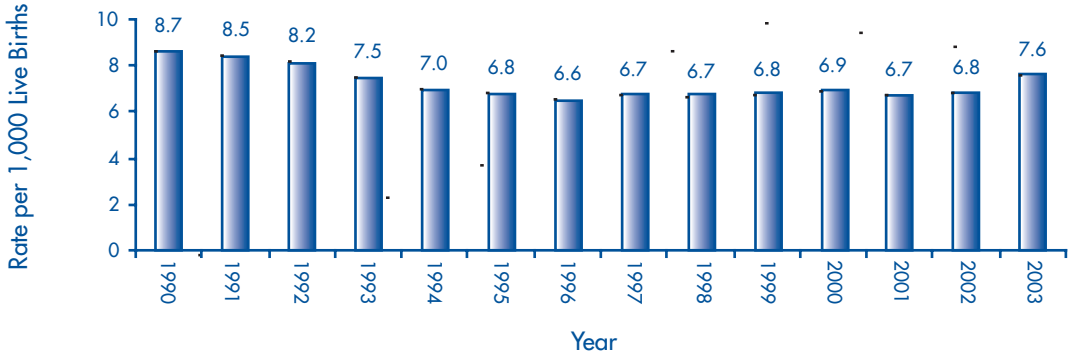
If a pregnancy is unintended and unwanted, the mother is more likely to seek prenatal care late in pregnancy, or not at all. She is more likely to expose the fetus to harmful substances such as tobacco, alcohol or illegal drugs. Women who are not committed to the pregnancy are less likely to alter behavior or follow their provider's advice, thus increasing the risk of a premature or low birth weight infant.

Major Risk Factors

- Unintended or unwanted pregnancy
- Less than adequate prenatal care
- Smoking and substance use during pregnancy
- First birth as a teen and maternal age under 20 or over 40
- Physical abuse or other serious stress during pregnancy
- Poverty

Michigan Mortality Data from Death Certificates

Figure 21
Michigan Natural Infant Death Rates Excluding SIDS, Ages 0-1, 1990-2003



Note: The rate of 6.8 in 2002 represents 883 deaths; the 7.6 in 2003 represents 987 deaths.

Table 24
Number and Percent of Michigan Natural Infant Deaths Excluding SIDS by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	481	54.5	563	57.0
0 to 23 Hours after Birth	250	28.3	259	26.2
24 to 47 Hours after Birth	24	2.7	62	6.3
48 Hours to 1 Month	131	14.8	166	16.8
2 Months to 5 Months	52	5.9	54	5.5
6 Months to 1 Year	24	2.7	22	2.2
Female	399	45.2	424	43.0
0 to 23 Hours after Birth	213	24.1	227	23.0
24 to 47 Hours after Birth	31	3.5	26	2.6
48 Hours to 1 Month	109	12.3	106	10.7
2 Months to 5 Months	33	3.7	46	4.7
6 Months to 1 Year	13	1.5	19	1.9
Unknown	3	0.3	0	0.0
Total	**883**	**100.0**	**987**	**100.0**

Figure 22
Michigan Natural Infant Death Rates Excluding SIDS by Race, Ages 0-1, 2003

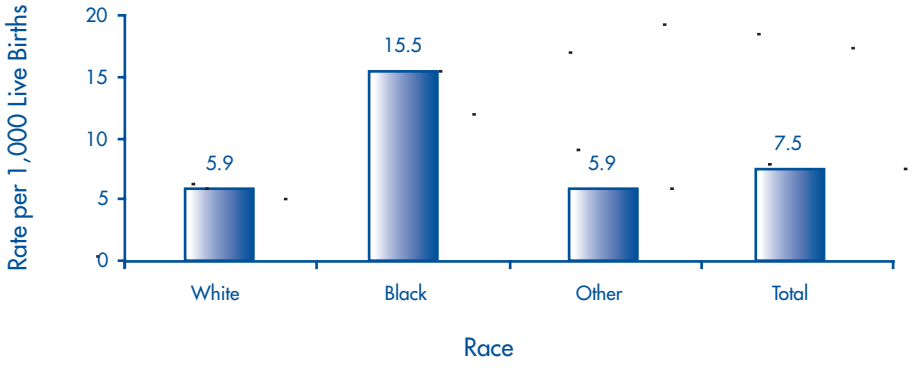


Table 25
Number and Percent of Natural Infant Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	131	60.4	130	61.3
0 to 23 Hours after Birth	60	27.7	55	25.9
24 to 47 Hours after Birth	4	1.8	7	3.3
48 Hours to 5 Weeks	31	14.3	28	13.2
6 Weeks to 5 Months	28	12.9	33	15.6
6 Months to 1 Year	8	3.7	7	3.3
Female	85	39.2	82	38.7
0 to 23 Hours after Birth	34	15.7	34	16.0
24 to 47 Hours after Birth	1	0.5	5	2.4
48 Hours to 5 Weeks	26	12.0	23	10.8
6 Weeks to 5 Months	13	6.0	17	8.0
6 Months to 1 Year	11	5.1	3	1.4
Unknown	1	0.5	0	0.0
Total	**217**	**100.0**	**212**	**100.0**

Teams found that nearly 40% of the babies who died were born under 1500 grams, which is considered very low birth weight.

Table 26
Number and Percent of Natural Infant Deaths Reviewed by Age of Mother

Age of Mother	2002		2003	
	Number	Percent	Number	Percent
Under 15 Years	1	0.5	1	0.5
15 to 19 Years	25	11.5	20	9.4
20 to 24 Years	40	18.4	45	21.2
25 to 29 Years	24	11.1	35	16.5
30 to 34 Years	21	9.7	29	13.7
35 to 39 Years	17	7.8	11	5.5
40 Years and Older	5	2.3	2	0.9
Unknown	84	38.7	69	32.5
Total	**217**	**100.0**	**212**	**100.0**

When the information was available, teams found that 33% of the cases were determined to have medical complication during the pregnancy. In more than 16% of the cases, the mother had admitted to smoking during pregnancy.

In 152 cases (35%), teams reported that the mother entered prenatal care during the first trimester. In 14 cases, no prenatal care was received.

Prior CPS involvement or past CPS complaints* were found in 47 (11%) of the cases. In 36 cases, MDHS conducted an investigation and determined the referral to be unsubstantiated. In five cases, the complaint was substantiated. For the 47 cases with prior CPS involvement, 18 cases involved the child, 28 involved another family member, one was with a non-family caretaker and in three cases, this information was missing. MDHS family preservation services were in place with 11 of these families.

Maternal Support Services or Infant Support Services (MSS/ISS) were utilized in 23 cases. Families were enrolled in the WIC program in 55 of the cases reviewed.

In 27 of the cases, the baby was found in an unsafe sleep environment. The environments included bed-sharing, heavy bedding, breastfeeding position, adult bed, car seat and in a crib with other items such as stuffed animals.

Natural infant death was not seen by teams as being highly preventable. In only about 10% of the natural infant deaths excluding SIDS did the team believe the death was either probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Teams proposed 31 prevention activities and initiated 17 of these relating to natural infants deaths excluding SIDS. Examples of these initiatives include:

Alger – Recommend that the state facilitate MSS for all expectant moms and negotiate payments from companies to local health departments (or other MSS providers).

Berrien – Implemented FIMR team to address concerns about infant mortality rate.

Genesee – Identified need for appropriate communication between agencies when mother and baby have not been referred for MSS/ISS services. Also need for better coordination of outreach programs.

Grand Traverse – Medical examiner agreed to talk to other providers who work with pregnant women so that Healthy Futures is notified when something goes wrong with a pregnancy.

Iosco – Recommended that local hospital upgrade to include facilities for dealing with multiple births.

Isabella – Identified need for increased WIC outreach promotion to OB offices.

Saginaw – Proposed universal standards for drug screening, with consent to test on admission and referrals to professional substance counseling.

* The past CPS involvement refers to any time prior to the death. It may have been involvement with a parent when he or she was a child.

Recommendations for Policymakers

1. The Michigan Department of Community Health: Expand and continue technical and financial support to Fetal and Infant Mortality Review Programs in communities with high infant mortality rates and racial disparities.

2. The Michigan Department of Community Health: Promote the *Grief and Bereavement* service through the SIDS and Other Infant Death Program to medical examiners, hospitals, local public health departments, Fetal and Infant Mortality Review teams and local Child Death Review teams.

3. The Michigan Legislature: Continue to provide Medicaid coverage for family planning services to include all women up to 185% of the poverty level.

4. The Michigan Surgeon General: Work with medical practitioners, medical organizations and insurance companies to ensure:
   a. An increase in the number of providers that discuss pregnancy intendedness at every visit with all females of childbearing age.
   b. Providers offer preconception counseling to all females of childbearing age.
   c. Adequate number of providers that accept Medicaid patients, in reasonable proximity to those patient populations.
   d. Early access to and continuity of care for all pregnant females.
   e. Compliance with state laws that require physicians to offer pregnant females client-centered counseling and voluntary HIV testing.
   f. Screening for all pregnant females and new parents for domestic violence and substance abuse.
   g. Redesign of the Maternal Support Services and Infant Support Services programs to:
      - Improve identification and increase referrals of high risk persons;
      - Assure a quality assessment is performed;
      - Assure services are designed to specifically reduce risk; and
      - Design reimbursement to reinforce the likelihood of improved birth outcomes.
   h. Providers offer referrals to smoking cessation services for pregnant and new parents.

Recommendations for Parents and Caregivers

- If you think you are pregnant, see your health care provider early and often and follow their advice closely.
- If you are pregnant, do not smoke anything, drink alcohol or take recreational drugs.
- Learn about the warning signs for pre-term labor. If you experience any of them, call your doctor or health care provider right away.

Natural - Sudden Infant Death Syndrome

Background

Sudden Infant Death Syndrome (SIDS) is the sudden death of an infant under one year of age which remains unexplained after completion of a complete autopsy, examination of the death scene and review of the baby's health history. If any of these three steps are not conducted, a SIDS diagnosis should not be made. The SIDS diagnosis reflects that an infant's death remains completely unexplained.

Studies throughout the world have found that when infants are placed on their backs for sleep, they are much less likely to die of SIDS. In 1994, the American Academy of Pediatrics endorsed a nationwide *Back to Sleep* education campaign. In Michigan, Tomorrow's Child (known then as the Michigan SIDS Alliance) served as the lead organization for this campaign. Since then, SIDS deaths have been reduced by over 60% in Michigan.

Other risk factors are known to exist in SIDS deaths, including in-utero and second-hand tobacco exposure of the infant and overheating.

Better death scene investigations in the state are providing new insights by helping to identify risk factors. The more recent reductions in SIDS numbers in Michigan are due to a shift in diagnosis rather than an actual decrease in the number of deaths. As unsafe sleep environments are identified by investigation, many infant deaths that would have been called SIDS in past years are now classified as asphyxias or of undetermined cause.

These new insights have begun to move prevention strategies beyond the *Back to Sleep* campaign. MDCH, MDHS and Tomorrow's Child are currently working together to develop targeted messages about infant sleep environments.

Major Risk Factors

- Infants sleeping on their stomachs
- Soft infant sleep surfaces and loose bedding
- Infants that share a sleeping surface with other children or adults
- Not recognizing the protective factors of a safe crib as defined by Consumer Product Safety Commission
- Maternal smoking during pregnancy
- Second-hand smoke exposure
- Overheating
- Prematurity and/or low birth weight

Figure 23
Michigan SIDS Deaths, Ages 0-1, 1990-2003

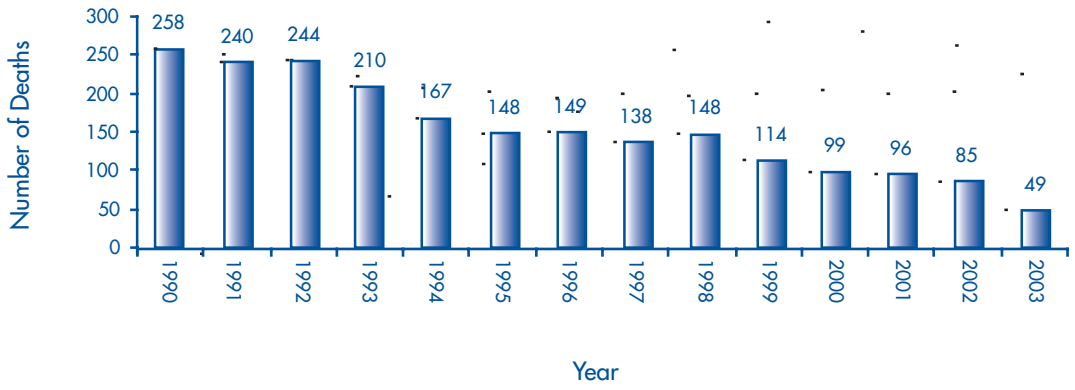
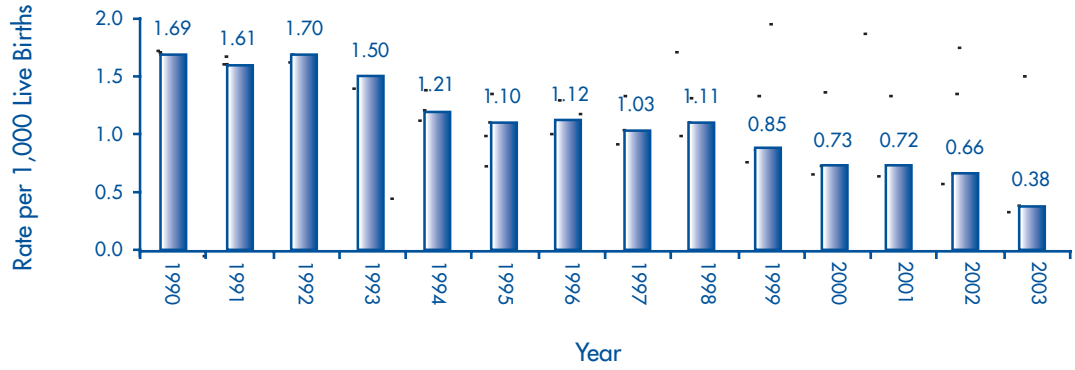


Figure 24
Michigan SIDS Death Rates, Ages 0-1, 1990-2003

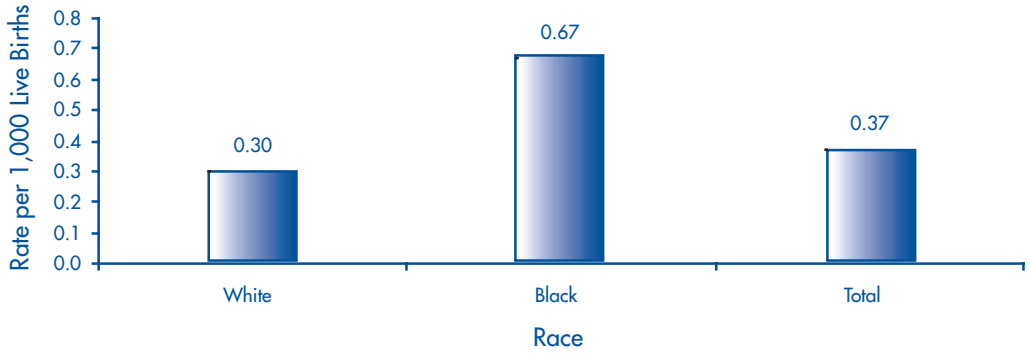


Note: The rate of 0.66 in 2002 represents 85 deaths; the 0.38 in 2003 represents 49 deaths.

Table 27
Number and Percent of Michigan SIDS Deaths by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	46	54.1	30	61.2
Under 2 Months	14	16.5	5	10.2
2 to 4 Months	13	15.3	12	24.5
4 to 6 Months	15	17.6	9	18.4
6 to 8 Months	3	3.5	4	8.2
8 to 12 Months	1	1.2	0	0.0
Female	39	45.9	19	38.8
Under 2 Months	13	15.3	7	14.3
2 to 4 Months	12	14.1	9	18.7
4 to 6 Months	8	9.4	1	2.0
6 to 8 Months	4	4.7	1	2.0
8 to 12 Months	2	2.4	1	2.0
Total	**85**	**100.0**	**49**	**100.0**

Figure 25
Michigan SIDS Death Rates by Race, Ages 0-1, 2003



Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed 105 SIDS cases in 2002 and 2003. Sixty-seven percent were male and 33% were female. About 89% of these infants died before six months of age.

Table 28
Number and Percent of SIDS Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	37	59.7	29	67.4
Under 2 Months	11	17.7	5	11.6
2 to 4 Months	15	24.2	10	23.3
4 to 6 Months	5	8.1	10	23.3
6 to 8 Months	4	6.5	4	9.3
8 to 12 Months	2	3.2	0	0.0
Female	25	40.3	14	32.6
Under 2 Months	5	8.1	9	20.9
2 to 4 Months	9	14.5	4	9.3
4 to 6 Months	9	14.5	1	2.3
6 to 8 Months	2	3.2	0	0.0
8 to 12 Months	0	0.0	0	0.0
Total	**62**	**100.0**	**43**	**100.0**

All of the 105 SIDS deaths were designated as medical examiner cases, with autopsies completed. Teams reported that in 96 of the cases, death scene investigations were conducted. In half of the cases, medical records were reported to have been reviewed by the medical examiner.

Table 29
Number and Percent of SIDS Deaths Reviewed by Infant's Sleeping Location when Found

Sleeping Location	2002		2003	
	Number	Percent	Number	Percent
Adult Bed	22	35.5	12	27.9
Crib	12	19.4	12	27.9
Couch	9	14.5	5	11.6
Playpen	5	8.1	1	2.3
Bassinet	3	4.8	3	7.0
Floor	2	3.2	1	2.3
Car Seat	1	1.6	3	7.0
On a Sleeping Adult	1	1.6	2	4.7
Other	5	8.1	4	9.3
Unknown	2	3.2	0	0.0
Total	**62**	**100.0**	**43**	**100.0**

Sleeping babies on their backs is the safest position. But because this fact has been known for some time, it may be that a diagnosis of SIDS (vs Suffocation) is now more likely to be made when infants are found on their backs vs on their stomachs.

Table 30
Number and Percent of SIDS Deaths Reviewed by Sleeping Position when Found

Sleeping Position	2002		2003	
	Number	Percent	Number	Percent
Stomach	27	43.5	15	34.9
Back	20	32.3	14	32.6
Side	5	8.1	8	18.6
Unknown	10	16.1	6	14.0
Total	**62**	**100.0**	**43**	**100.0**

Sleep Environment

A safe sleep environment is now known to be an important protective factor for infants. Research has proven that the safest place for a baby to sleep is in a crib on his or her back. Teams found that in only 23% of the SIDS cases was the baby sleeping in a crib when found. Only 32% of the babies were sleeping on their back when found. The nine "other" sleep locations include the following: waterbed, toddler bed, port-a-crib (2) bouncy seat (2), baby swing, recliner and a mattress on the floor.

In almost a third of the cases (34), the baby was found sleeping on an adult bed. Of these cases, 22 were also sleeping with another person. In nearly half the SIDS cases, the baby was in a sleep environment that contained heavy bedding. This included quilts and blankets. Exposure to cigarette smoke was found in just over half the cases.

In only eight of the 105 SIDS deaths reviewed was the baby sleeping in a crib, alone and on his or her back.

CDR teams believed that about 40% of the SIDS cases reviewed were either probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Teams proposed 50 prevention activities relating to SIDS and 40 of those were initiated. Examples of these include:

Antrim – Ongoing SIDS education to all pregnant women and new families seen through MSS/ISS at NWMCHA. Also a SIDS presentation in a local high school.

Arenac - Safe Sleep information implemented in community parenting class.

Barry - Discharge teaching to all new parents in OB department at local health system on the "Back to Sleep" program.

Isabella – Identified need for increased education regarding SIDS prevention.

Monroe – The Michigan State Police conducted training regarding best practices for investigators following a SIDS death.

Recommendations for Policymakers

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

2. The Children's Cabinet: Collaborate among member agencies and partner with the MDCH SIDS and Other Infant Death Program and Michigan professional associations to implement a statewide campaign promoting safe infant sleep environments consistent with the recommendations of the American Academy of Pediatrics.

3. The Michigan Department of Community Health: Strengthen the prenatal smoking cessation program, especially as it relates to Sudden Infant Death Syndrome.

Recommendations for Parents and Caregivers

- Always keep your baby in a smoke-free environment.
- Practice the recommendations from the Consumer Product Safety Commission (CPSC) for infant safe sleep environments:
  - Place your baby on his/her back on a firm, tight fitting mattress in a crib that meets current safety standards.
  - Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.
  - Use a sleep sack as an alternative to blankets, with no other covering.
  - If using a blanket, put your baby with feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as your baby's chest.
  - Make sure your baby's head remains uncovered during sleep.
  - Do not place your baby on a waterbed, sofa, soft mattress, pillow, or other soft surface to sleep.
  - Do not sleep in the same bed as your baby.

Natural Child Deaths, Ages 1-18

Background

Death from natural causes is the second leading cause of mortality to children over one year of age, following unintentional injuries. Congenital anomalies, genetic disorders, cancers, heart and cerebral problems, serious infections and respiratory disorders such as asthma can all be fatal to children. Many of these conditions are not believed to be preventable in the same way in which accidents, homicides or suicides are preventable. But deaths due to certain illnesses do involve issues of preventability.

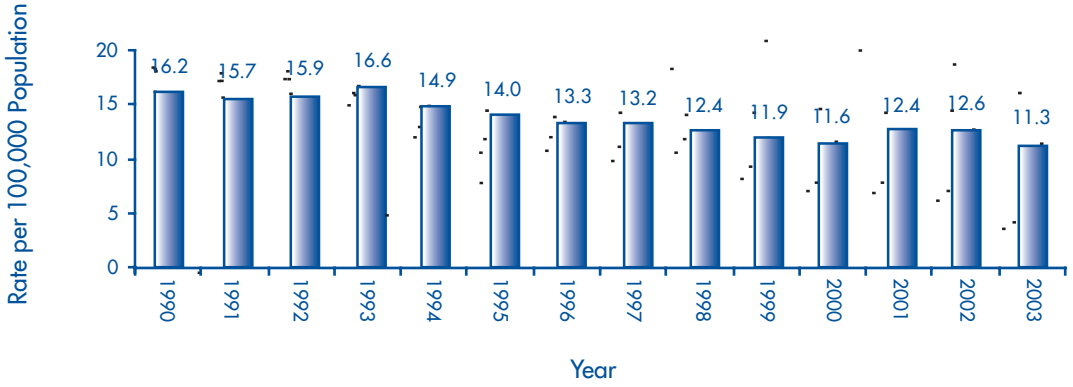
For example, deaths due to asthma are usually preventable. Asthma is a chronic respiratory disease that involves episodes of airway constriction due to inflammation. Asthma affects approximately five million children a year in the U.S. The asthma death rate for children 19 years and younger increased by 78% between 1980 and 1993. Despite these statistics, treatments for asthma are numerous and generally very effective. The Michigan Asthma Coalition is working to improve the diagnosis and treatment of children with asthma by conducting in-depth case reviews of child asthma fatalities.

Major Risk Factors

- Children with congenital anomalies and other genetic disorders
- Children who do not receive regular preventive medical care
- Children who live in poverty

Michigan Mortality Data from Death Certificates

Figure 26
Michigan Natural Child Death Rates, Ages 1-18, 1990-2003

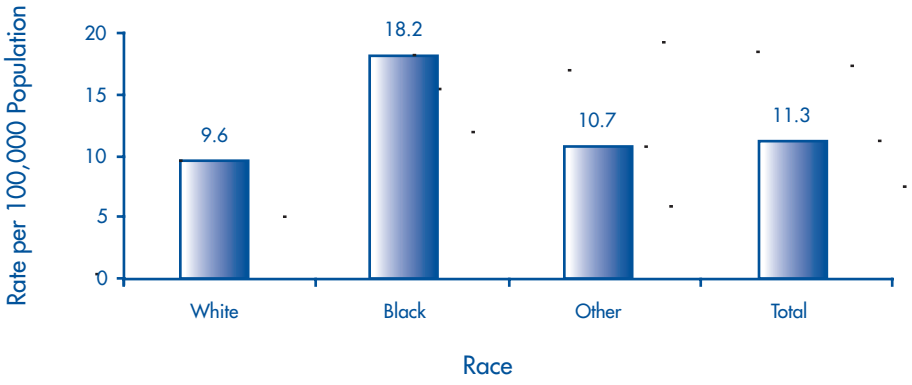


Note: The rate of 12.6 in 2002 represents 324 deaths; the 11.3 in 2003 represents 289 deaths.

Table 31
Number and Percent of Michigan Natural Child Deaths by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	188	58.0	165	57.1
1 to 4 Years	52	16.0	45	15.6
5 to 9 Years	36	11.1	29	10.0
10 to 14 Years	44	13.6	39	13.5
15 to 18 Years	56	17.3	52	18.0
Female	136	42.0	123	42.6
1 to 4 Years	33	10.2	34	11.8
5 to 9 Years	32	9.9	29	10.0
10 to 14 Years	29	9.0	33	11.4
15 to 18 Years	42	13.0	27	9.3
Unknown	0	0.0	1	0.3
Total	**324**	**100.0**	**289**	**100.0**

Figure 27
Michigan Natural Child Death Rates by Race, Ages 1-18, 2003



Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed 230 cases of natural death to children over the age of one in 2002 and 2003. Nearly one third of these were children between one and four years of age.

Table 32
Number and Percent of Natural Child Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	69	57.0	68	62.4
1 to 4 Years	20	16.5	20	18.3
5 to 9 Years	11	9.1	11	10.1
10 to 14 Years	20	16.5	19	17.4
15 to 18 Years	18	14.9	18	16.5
Female	52	43.0	41	37.6
1 to 4 Years	15	12.4	16	14.7
5 to 9 Years	13	10.7	7	6.4
10 to 14 Years	14	11.6	8	7.3
15 to 18 Years	10	8.3	10	9.2
Total	**121**	**100.0**	**109**	**100.0**

Table 33
Number and Percent of Natural Child Deaths Reviewed by Underlying Cause

Cause	2002		2003	
	Number	Percent	Number	Percent
Respiratory / Asthma	14	11.6	28	25.7
Congenital Anomalies	20	16.5	12	11.0
Cerebral	13	10.7	18	16.5
Cardiac	12	9.9	19	17.4
Cancer / Neoplasm	11	9.1	16	14.7
Infectious Illness	6	5.0	11	10.1
Other	58	47.9	26	23.9

CPS was involved at the time of the death or had been involved with the family in the past in 38 of the 230 cases. In 29 of these 38 cases, the involvement was with the child who died. In 10 of the 38 cases, the team felt that neglect on the part of the parent or caregiver contributed to the severity of the child's medical condition and subsequent death. The causes of death in those 10 cases were: Asthma (3), Cerebral Palsy (2), Meningitis (2), Bronchiolitis, Diabetes and Sickle Cell Anemia.

There were 23 deaths reviewed that were due to asthma. Thirteen percent of these children were ages 1-4, 13% were ages 5-9, 52% were ages 10-14 and 22% were ages 15-18. Fifteen were black, seven were white and one was American Indian. For the youngest of these children (12 months old), the asthma had not been diagnosed previously. Of the remainder, the teams identified issues of compliance with medical treatments for the child in eight of the cases. In two of those cases, it was known that at least part of the reason for the child not receiving the proper medications was financial or insurance-related.

The children were receiving Children's Special Health Care Services in 43 of the 230 cases of natural death (19%).

CDR Teams determined that about 16% of the natural deaths to children over one were either probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Teams proposed 31 prevention activities relating to natural deaths of children over one and 21 of those were initiated. Examples of these include:

Livingston – Held three Community/School informational meetings regarding an infectious illness. Local public health department's plan for dealing with this virus was updated.

Oakland – School changed their protocols after being contacted by CDR team members about lapse in response time after student's seizure.

Otsego – Using Human Service Collaborative Body to increase communication between doctors, DHS and public health on high-risk asthma kids.

Washtenaw – Medical Examiner agreed to present certain cases to the Pediatric groups as part of grand rounds in order to elicit ideas about medical management of children with similar symptoms.

Recommendation for Policymakers

1. The Michigan Department of Community Health and the Michigan Department of Human Services: Support a partnership and the sharing of information between the Michigan Child Death Review Program and the Michigan Asthma Coalition to improve the diagnosis, treatment and prevention of childhood asthma.

Recommendations for Parents and Caregivers

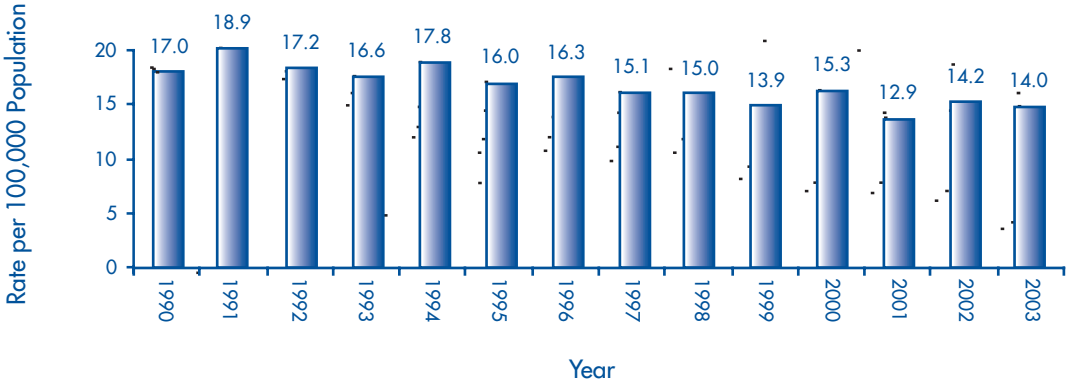
- Ensure that your children receive regular preventive medical care.
- Promptly seek medical care when you think your children need to see a doctor and make sure your children follow their treatment plans.

Child Deaths
IN MICHIGAN
section five

ACCIDENTS (Unintentional Injuries)

Overview of Accidental Child Deaths, Ages 0-18

Figure 28
Michigan Accidental Child Death Rates, Ages 0-18, 1990-2003

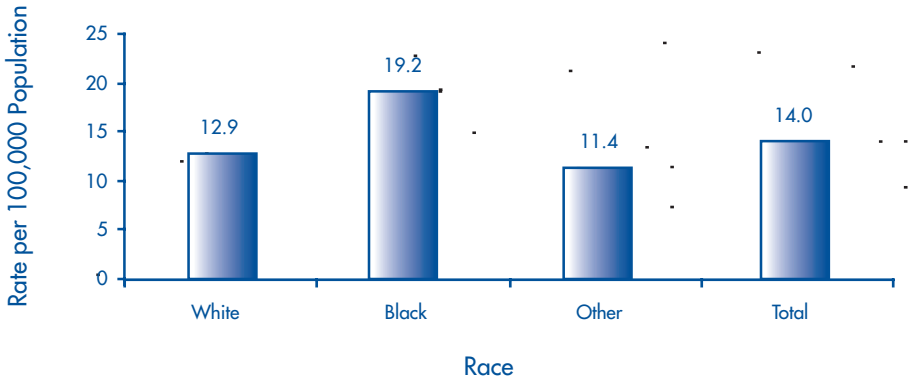


Note: The rate of 14.2 in 2002 represents 385 deaths; the 14.0 in 2003 represents 377 deaths.

Table 34
Number and Percent of Michigan Accidental Child Deaths by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	258	67.0	247	65.5
Under One Year	37	9.6	41	10.9
1 to 4 Years	33	8.6	31	8.2
5 to 9 Years	29	7.5	30	8.0
10 to 14 Years	52	13.5	42	11.1
15 to 18 Years	107	27.8	103	27.3
Female	127	33.0	129	34.2
Under One Year	35	9.1	24	6.4
1 to 4 Years	16	4.2	19	5.0
5 to 9 Years	13	3.4	18	4.8
10 to 14 Years	13	3.4	25	6.6
15 to 18 Years	50	13.0	43	11.4
Unknown	0	0.0	1	0.3
Total	**385**	**100.0**	**377**	**100.0**

Figure 29
Michigan Accidental Child Death Rates by Race, Ages 0-18, 2003



Accidental – Motor Vehicle

Background

Children Under 16

Proper child restraints are the key to preventing fatalities to children under 16 who ride in motor vehicles. Properly installed child safety seats reduce deaths by 70% for children under age one, and by 55% for toddlers ages 1-4.

Booster seats are especially important to prevent deaths in children ages 4-8. Using a booster seat with a seat belt instead of a seat belt alone reduces a child's risk of injury by 59% for children in this age group. Yet, according to a recent study conducted by the University of Michigan Transportation Research Institute, only 8.6% of Michigan children ages four to eight ride in booster seats. Children less than 4'9" tall and less than 80 pounds generally do not fit safely in seat belts. Booster seats raise a child's sitting height so that the lap belt fits across the tops of the thighs instead of the abdomen, and the shoulder strap fits across the collarbone instead of the neck. In trying to address the low level of booster seat usage, the National Highway Traffic Safety Administration (NHTSA) declared 2004 to be "The Year of the Booster Seat." They and the Ad Council provided child passenger safety advocates with the tools needed to launch awareness campaigns in their communities.

The rate of child death and injury on all-terrain vehicles (ATVs) in the U.S. has sky-rocketed in the last several years. According to the CPSC, between 1993 and 2002, serious ATV-related injuries to children under 16 more than doubled. During this same time period, children under 16 accounted for 37% of all injuries and 33% of all deaths on ATVs in the U.S.

Children Over 16

New teen drivers are at very high risk for causing motor vehicle crashes. According to NHTSA, teenagers are involved in three times as many fatal crashes as are all drivers, on the basis of miles driven. This difference is attributed to teens' inexperience behind the wheel, an increased likelihood of risk-taking behavior and a greater risk exposure.

The risk of injury or death greatly increases for teens when they ride in a car with a new teen driver. Two out of three teens who die as passengers are in vehicles driven by other teens. The young drivers in these situations are also at increased risk. One study found that 16-year-olds driving with one teen passenger were 39% more likely to get killed than those driving alone. This percentage increased to 86% with two and 182% with three or more teen passengers. The rates increased even more with 17-year-old drivers: 48% with one teen passenger, 158% with two and a 207% increase with three or more teen passengers. The study theorized that "general foolishness and distractions" increased with each additional teen passenger, which, when coupled with their inexperience, was responsible for these findings.

Major Risk Factors

Children Under 16

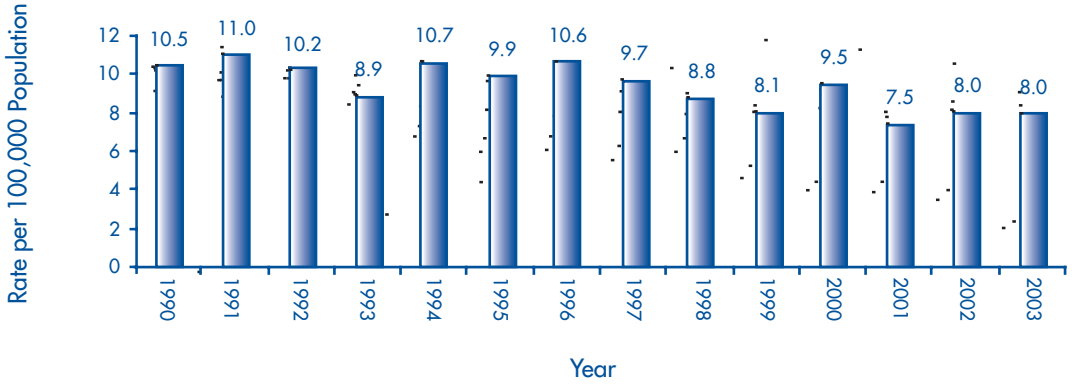
- Non-use/misuse of child restraints
- Not wearing helmets on motorcycles, bicycles and ATVs
- Unskilled and/or unsupervised drivers of off-road vehicles, including snowmobiles, jet skis, ATVs, go-carts and dirt bikes

Children Over 16

- New driver inexperience and/or recklessness
- New drivers with other teens as passengers
- Exceeding safe speeds for road conditions
- Not using seat belts
- Drinking and driving, or riding with someone who is under the influence of alcohol

Michigan Mortality Data from Death Certificates

Figure 30
Michigan Accidental Child Death Rates Due to Motor Vehicles, Ages 0-18, 1990-2003

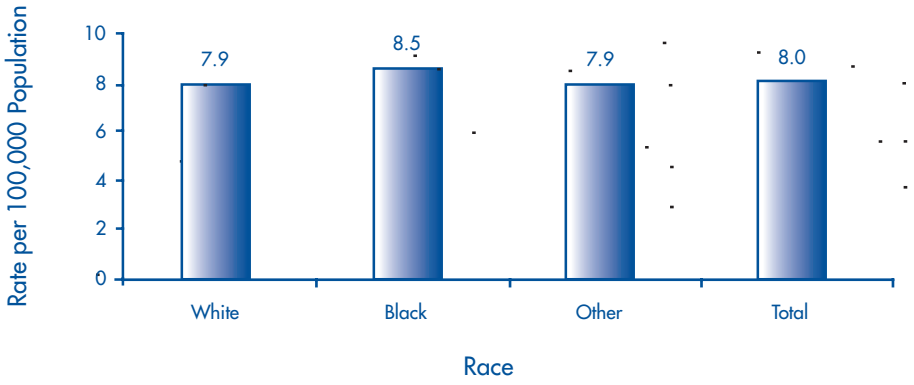


Note: The rate of 8.0 in 2002 represents 217 deaths; the 8.0 in 2003 represents 215 deaths.

Table 35
Number and Percent of Michigan Accidental Child Deaths Due to Motor Vehicles by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	146	67.3	133	61.9
Under One Year	6	2.8	2	0.9
1 to 4 Years	8	3.7	10	4.7
5 to 9 Years	12	5.5	15	7.0
10 to 14 Years	33	15.2	29	13.5
15 to 18 Years	87	40.1	77	35.8
Female	71	32.7	81	37.7
Under One Year	3	1.4	4	1.9
1 to 4 Years	6	2.8	8	3.7
5 to 9 Years	5	2.3	11	5.1
10 to 14 Years	10	4.6	19	8.8
15 to 18 Years	47	21.7	39	18.1
Unknown	0	0.0	1	0.4
Total	**217**	**100.0**	**215**	**100.0**

Figure 31
Michigan Accidental Child Death Rates Due to Motor Vehicles by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

Local teams reviewed 337 motor vehicle related deaths to children in 2002 and 2003. They found that boys were twice as likely to die in a crash as girls.

Table 36
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	124	67.0	101	66.4
Under One Year	7	3.8	2	1.3
1 to 4 Years	7	3.8	11	7.2
5 to 9 Years	9	4.9	9	5.9
10 to 14 Years	28	15.1	23	15.1
15 to 18 Years	66	35.7	54	35.5
19 to 21 Years	7	3.8	2	1.3
Female	61	33.0	51	33.6
Under One Year	5	2.7	4	2.6
1 to 4 Years	9	4.9	4	2.6
5 to 9 Years	2	1.1	7	4.6
10 to 14 Years	10	5.4	10	6.6
15 to 18 Years	33	17.8	23	15.1
19 to 21 Years	2	1.1	3	2.0
Total	**185**	**100.0**	**152**	**100.0**

Table 37
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Cause of Crash

Cause	2002		2003	
	Number	Percent	Number	Percent
Driving Error	97	52.4	85	55.9
Speeding	55	29.7	41	27.0
Recklessness	42	22.7	22	14.5
Poor Weather	15	8.1	10	6.6
Mechanical Failure	2	1.1	1	0.7
Other	48	25.9	40	26.3

Table 38
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Age of Driver at Fault

Age of Driver at Fault	2002		2003	
	Number	Percent	Number	Percent
<16	9	4.9	15	9.9
16-18	67	36.2	59	38.8
19-21	23	12.4	12	7.9
22-35	28	15.1	15	9.9
36-59	21	11.4	15	9.9
>59	2	1.1	6	3.9
No Answer	35	18.9	30	19.7
Total	**185**	**100.0**	**152**	**100.0**

Teams found that drivers 16-18 years old were nearly three times as likely to be at fault in the fatal crashes reviewed than the next most frequent at-fault age group (22-35).

Table 39
Number and Percent of Accidental Motor Vehicle Deaths Reviewed for Drivers at Fault Aged 18 and Under by Number of Teen Passengers

Teen Passengers	2002		2003	
	Number	Percent	Number	Percent
One	22	28.9	17	23.0
Two	8	10.5	10	13.5
Three or More	8	10.5	11	14.9
None/Unknown	38	50.0	36	48.6
Total	**76**	**100.0**	**74**	**100.0**

One or more teen passengers were in the car for half of the fatalities reviewed in which the driver at fault was 18 years of age or under.

Table 40
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Position of Child

Position of Child	2002		2003	
	Number	Percent	Number	Percent
Passenger	73	39.5	66	43.4
Driver	59	31.9	53	34.9
Pedestrian	34	18.4	21	13.8
Bicyclist	8	4.3	6	3.9
Other	10	5.4	4	2.6
Unknown	1	0.5	2	1.3
Total	**185**	**100.0**	**152**	**100.0**

Five cases were reviewed of babies who died after being delivered subsequent to their mothers being involved in a motor vehicle crash. They died either due to the trauma sustained in the crash, or to prematurity from having been delivered too soon.

Of the 14 bicycle-related crashes, 13 children were known to have been not wearing a bike helmet at the time, and in the other case, this item was left unanswered. Helmet use was identified by teams as having been needed in 18 other cases: four of six children killed while on ATVs were not wearing helmets (one child that was killed by an ATV was a pedestrian); two of four child motorcyclists who were killed were not wearing helmets; one of three children who died on snowmobiles was not wearing a helmet; one of four children killed in go-carts was not wearing a helmet; and one child who was killed riding a moped was wearing a helmet.

Two of the eight children killed in ATV-related crashes were of the age group (12-15) that Michigan law (MCL 324.81129) requires to only operate an ATV while in visual supervision of an adult and in possession of a valid off-road vehicle safety certificate. Although there is no mention of safety certificates in any of the cases, neither of these children was within sight of a supervising adult. Two others were of the age group (under 10) that is not supposed to operate such a vehicle, except while performing farm related work operations. One of the two children (six years old) was driving the ATV for recreational purposes and in the other case, it is unclear why a five-year-old was driving the vehicle. It is believed that kids, parents and even some law enforcement jurisdictions are unfamiliar with the specifics of this state law, and that compliance and enforcement are both quite low.

Table 41
Number and Percent of Pedestrian Victims Reviewed by Age

Age of Child	2002		2003	
	Number	Percent	Number	Percent
1-4	7	20.6	8	38.1
5-9	4	11.8	4	19.0
10-14	11	32.4	6	28.6
15-18	12	35.3	3	14.3
Total	**34**	**100.0**	**21**	**100.0**

Children that are killed as pedestrians are not always toddlers and young children who dart out into traffic. Local teams found that 58% of the pedestrian deaths reviewed were to kids ages 10 and over.

Six of the 15 pedestrian deaths to kids ages 1-4 were "back-over" cases; that is, when a small child is run over by a vehicle, in or around a driveway.

Alcohol was noted to have been a factor in 20% of the crashes overall, and the teen driver or person driving the vehicle in which the child was killed was intoxicated in 14% of the motor vehicle crash cases reviewed.

Table 42
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Road Condition

Condition of Road	2002		2003	
	Number	Percent	Number	Percent
Normal	120	64.9	104	68.4
Wet	17	9.2	5	3.3
Ice or Snow	12	6.5	14	9.2
Loose Gravel	12	6.5	11	7.2
Fog	1	0.5	0	0.0
Construction	1	0.5	0	0.0
Unknown	22	11.9	18	11.8
Total	**185**	**100.0**	**152**	**100.0**

Some teams have identified a lack of experience driving in poor weather conditions and on gravel roads as being risk factors for new teen drivers. Teens tend not to get practice driving hours, whether with their parents or with their drivers education instructor, in such road conditions. Then when they are driving on their own and encounter a loss of traction in poor weather or on gravel, they often panic and overcorrect, causing rollover crashes and collisions with trees, both of which are very deadly types of crashes. Statewide review data supports this local finding. When weather conditions were noted: for normal road conditions, drivers less than 18 were at fault in 39% of the cases reviewed; in poor weather (ice/snow, wet or foggy), drivers less than 18 were at fault 59% of the time. Even more striking, when the crash occurred on gravel roads, drivers less than 18 were at fault 87% of the time. These findings have implications for local drivers education curricula, regarding the need for teens to receive specific instruction in this area and to experience more of these road conditions during driving practice.

Table 43
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Restraint Needed and Use of Restraint

Restraint Needed and Used	2002		2003	
	Number	Percent	Number	Percent
Seatbelt Needed	113	85.6	88	73.9
Used Correctly	44	33.3	36	30.3
Used Incorrectly	3	2.3	2	1.7
Present, but not Used	51	38.6	37	31.1
None in Vehicle	1	0.8	0	0.0
Unknown	14	10.6	13	10.9
Child Car Seat Needed	12	9.1	14	11.8
Used Correctly	5	3.8	6	5.0
Used Incorrectly	1	0.8	1	0.8
Present, but not Used	0	0.0	1	0.8
None in Vehicle	4	3.0	5	4.2
Unknown	2	1.5	1	0.8
No Answer	7	5.3	17	14.3
Total	**132**	**100.0**	**119**	**100.0**

The need for booster seat usage is vastly under-recognized. Even CDR teams did not always identify children who should have been using boosters. Child car seats were identified by teams as the type of restraint needed in 26 of the motor vehicle deaths reviewed. However, 56 of these children were of the recommended age (under eight years) to use child car seats, including boosters.

Motor vehicle related deaths were seen by teams as being highly preventable: they were judged to be either probably or definitely preventable in 96% of the cases reviewed.

Local Initiatives to Prevent Child Deaths

Teams proposed 145 prevention activities relating to motor vehicle crash deaths and 64 of those were initiated. Examples of these include:

Isabella – Team was influential in getting speed limit decreased to 25 mph (from 45 mph) in a school zone on the Saginaw Chippewa Reservation…The Road Commission is also currently observing two dangerous intersections we called them about…We have increased information to parents about appropriate car restraints through a variety of local programs, including local CTF agency…Identified need for increased safety education regarding ATVs and specific motor vehicle crash issues to local drivers ed instructors.

Monroe - At the Celebrate Children festival held in April, we had a local auto dealership display information about preventing back-over accidents. Also, following a child being hit chasing down a school bus, we advocated with the schools to encourage families to make advance plans for what their children should do if they miss the bus.

Oakland - Wrote letters to MDOT to advocate for guardrail at a dangerous curve and regarding narrowness/flatness of one median with the lack of a wall in between at a crash location.

Ontonagon - Have held discussion and researched a safety project about drinking and driving.

Tuscola - Our "Sign at the Scene Project" was implemented to raise awareness about child deaths that occurred at certain intersections. We had media, family members and friends present on the teen that died at the ground breaking of the first sign.

Recommendations for Policymakers

1. The Michigan Legislature: Amend the current graduated licensing law to place limits on the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses. This limitation should apply at all times of the day, and without an exception allowed for written parental permission.

2. The Michigan Department of State: Partner with the Office of Highway Safety Planning and the Michigan Department of Community Health to conduct a comprehensive review and revision of driver education programs throughout the state to ensure that the curricula adequately address all high-risk driving situations.

3. The Michigan Department of Education: Through the Great Parents, Great Start program, work with Michigan SAFE KIDS to develop a system for distributing child safety seat information to parents, coordinated through the local Intermediate School Districts.

4. The Michigan Legislature: Amend the Michigan Child Passenger law to:
   a. Require the use of booster seats to protect children ages 4-8 and under 4'9" tall;
   b. Increase fines and points for those not following the law; and
   c. Increase public awareness and education programs.

5. The Prosecuting Attorneys Association of Michigan: Educate all law enforcement agencies through the Police Law Bulletin, regarding Public Act 451 of 1994 (MCL 324, sections 81129 and 81130); specifically, regarding the restrictions on children younger than 16 in the operation of all off-road vehicles, and encourage the prosecution of cases wherein this law was violated.

Recommendations for Parents and Caregivers

- Put limits on the number of teen passengers allowed in a car with your teen.
- Ensure that you use the correct child restraint for your child's age and weight. Children ages four to eight generally should be in booster seats.
- Make sure all your children wear helmets when riding a bicycle or other recreational vehicle.
- Do not allow your children ages 10-15 to drive an ATV out of your sight or without having completed the DNR's Off-Road Vehicle (ORV) safety course. Do not let your children under age 10 drive ATVs.

Accidental – Suffocation and Strangulation

Background

Children can accidentally suffocate in a variety of ways. With each passing year, there are more reports of infant suffocations. According to the CDC, unintentional suffocation was the number one cause of fatal injury for children less than one year of age in 2001. Many of these occur when an infant is put to sleep in an unsafe sleep environment. Infants who suffocate often have no clinical findings at autopsy. A comprehensive scene investigation is usually the only way that unintentional suffocation can be determined.

One type of infant suffocation death is due to overlay. These are caused when an infant sleeps with adults or siblings (bed-sharing), and the other person inadvertently compromises the infant's breathing ability with their body.

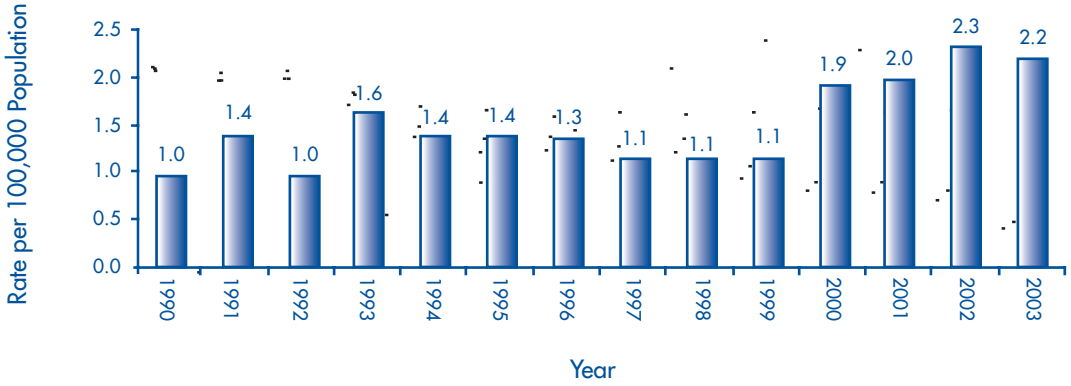
Suffocation in bedding occurs when infants sleep with soft or too much bedding (pillows, quilts, comforters) or when they sleep in locations other than cribs (waterbeds, couches, adult beds). Their faces can get covered or pressed into the soft bedding during sleep.

For choking and strangulation deaths, toddlers and preschoolers are at highest risk. Because they are mobile and often active, they can become entangled in cords or choke on small objects. Product safety improvements including rigorous scrutiny and recalls by the CPSC on toys with choking hazards, removal of drawstrings from children's clothing and safety cord hangers for window blinds have recently reduced the numbers of these types of suffocations and strangulations.

Major Risk Factors

- Infants sharing sleep surfaces with other persons
- Unsafe infant sleeping locations, such as adult beds, waterbeds, couches, futons
- Unsafe infant bedding, including poor-fitting or soft crib mattresses, pillows, stuffed toys, bumper pads, heavy or numerous blankets
- Easy access by infants and toddlers to small objects, cords and straps

Figure 32
Michigan Accidental Child Death Rates Due to Suffocation or Strangulation, Ages 0-18, 1990-2003

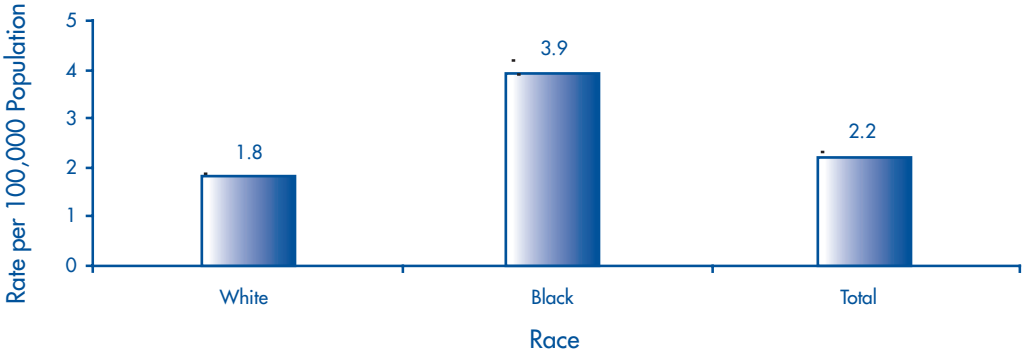


Note: The rate of 2.3 in 2002 represents 62 deaths; the 2.2 in 2003 represents 58 deaths.

Table 44
Number and Percent of Michigan Accidental Child Deaths Due to Suffocation or Strangulation by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	35	56.5	45	77.6
Under One Year	25	40.3	36	62.1
1 to 4 Years	4	6.5	3	5.2
5 to 9 Years	2	3.2	1	1.7
10 to 14 Years	3	4.8	2	3.4
15 to 18 Years	1	1.6	3	5.2
Female	27	43.5	13	22.4
Under One Year	25	40.3	13	22.4
1 to 4 Years	1	1.6	0	0.0
5 to 9 Years	1	1.6	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	0	0.0	0	0.0
Total	**62**	**100.0**	**58**	**100.0**

Figure 33
Michigan Accidental Child Death Rates Due to Suffocation or Strangulation by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

Local teams reviewed the deaths of 117 children due to unintentional suffocation or strangulation in 2002 and 2003. The vast majority of these deaths were to infants less than one year of age (85%).

Table 45
Number and Percent of Accidental Suffocation Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	36	53.7	33	66.0
Under One Year	31	46.3	22	44.0
1 to 4 Years	3	4.5	4	8.0
5 to 9 Years	2	3.0	2	4.0
10 to 14 Years	0	0.0	3	6.0
15 to 18 Years	0	0.0	2	4.0
Female	31	46.3	17	34.0
Under One Year	29	43.3	17	34.0
1 to 4 Years	1	1.5	0	0.0
5 to 9 Years	1	1.5	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	0	0.0	0	0.0
Total	**67**	**100.0**	**50**	**100.0**

Although black children make up only 15% of the child population of Michigan, and 30% of the total deaths reviewed in 2002 and 2003, they made up 41% of the accidental suffocation deaths reviewed for this same time period.

Table 46
Number and Percent of Accidental Suffocation Deaths Reviewed by Circumstance

Circumstance	2002		2003	
	Number	Percent	Number	Percent
Overlay by Person while Sleeping	34	50.7	23	46.0
Suffocation in Bedding	13	19.4	9	18.0
Wedging between Objects	7	10.4	8	16.0
Strangulation by an Object	6	9.0	4	8.0
Falling into Object off Adult Bed	2	3.0	1	2.0
Choked on an Object	2	3.0	2	4.0
Other/Unknown Type of Suffocation	2	4.5	3	6.0
Total	**67**	**100.0**	**50**	**100.0**

Overlay by Person while Sleeping

Teams reviewed 57 cases where the child suffocated when another person rolled over onto them during sleep. Of these, most involved young infants: 23 were less than two months old, 26 were 2-6 months old, six were 7-11 months old and two were 12-20 months old.

Sleeping locations in these incidents were: 39 in adult beds, 10 on couches, three in reclining chairs, two on futons, one on an air mattress and in two cases, information about sleeping location was not given.

Of the 39 overlays that occurred in adult beds, there was an average of about two other persons on the same sleep surface as the baby at the time of death.

In 20 of the 57 total overlay deaths, the person who overlaid the child had been drinking alcohol and/or doing drugs before sleeping with the baby. In 28 of the 57, the teams also noted that the baby was in either heavy or soft bedding, or both.

Suffocation in Bedding

Twenty-two cases were reviewed in which infants suffocated in their bedding. Most of these babies (82%) were three months of age or younger. Nine were black and 13 were white.

Eight of the infants suffocated in pillows, seven in blankets, two in bumper pads, one in an overstuffed chair, one in a soft bassinet mattress, one in a broken port-a-crib mattress and one in a stuffed toy. In one case, the information about the type of bedding was not noted.

Infant bedding suffocations took place in cribs in 12 cases, in bassinets in three cases, on couches in two cases, in adult beds in two cases and in port-a-cribs in two cases. In one case, the location of the baby at the time of death was not noted.

Wedging

Fifteen children died when they became wedged between two objects, thereby restricting their ability to breathe. Twelve of these were cases of infants who became wedged in a sleeping environment. Of these 12, all were seven months old or younger. Two of the other three children who asphyxiated from wedging were 11 years old, the other was two years old.

In eight of the 12 infant sleeping cases, the babies were placed on adult beds and subsequently became wedged: five were found between the mattress and the wall, one between the mattress and the headboard, one on the floor between the bed and a table leg and one between two mattresses that had been pushed together. For the other four cases: one baby became wedged between a regular crib mattress and the port-a-crib it had been placed in, one was between the mattress and a bed rail, one between a sectional sofa and the wall and one between a couch and a baby gate. There had been other persons sleeping on the same surface as the baby in seven of these 12 deaths.

For the three older children, one became wedged between a boat and trailer, one in between two sets of elevator doors and one in a car entrance gate mechanism.

Strangulation

Teams reviewed 10 cases in which children were accidentally strangled. Four of the children were one year old or younger, one was two years old, one was eight years old, two were nine years old, one was 14 years old and one was 17 years old.

Of the four infant strangulations, two strangled in the straps of their car seats that were not attached to the car at the time and subsequently tipped over, one strangled on the strap of a "Johnny Jump-Up" seat that was not attached to a door frame at the time and one strangled on the cord of a monitor that had been placed in the crib with the baby.

Of the remaining six strangulations, two school-aged children became entangled in their jackets when they fell while climbing trees; two children had been playing around with sheets and bunk beds in separate incidents when they subsequently strangled; one toddler strangled when he tried to slip off a bunk bed under the railing; and one teenager unintentionally hung himself during an episode of autoerotic activity.

Other Types of Suffocation

Three infants fell off of adult beds on which they had been placed to sleep and subsequently suffocated in something that was on the floor. In two cases, the infants suffocated in plastic bags and in the other, it was a pile of clothes. Two were two months old and one was five months old.

Four children asphyxiated from choking on objects. They were two months old, six months old, one year old and three years old. The items choked on were milk from a bottle, a hot dog, food of unspecified type and medication.

Teams reviewed six suffocation cases that did not fit into any of the previous categories. Of these, their ages were: fifteen, nine, six, one, nine months and five months old. Two children asphyxiated when they accidentally displaced their tracheostomy tubes during sleep, one suffocated in a hot car, one in a pile of sand he was playing in and one suffocated in an infant swing. In one case, the team indicated that the death was to a seven-month-old, but did not provide any additional information.

Of all 117 suffocation and strangulation deaths reviewed, teams believed the deaths to be either probably or definitely preventable in 91% of the cases.

Local Initiatives to Prevent Child Deaths

Teams proposed 79 local prevention activities related to suffocation and strangulation, and 43 of these were initiated. Examples of these include:

Arenac - Safe sleep information was implemented in community parenting class.

Barry - Discharge teaching to all new parents in OB department at local hospital on "Back to Sleep" program.

Berrien – Working with infant mortality task force on back to sleep and bed-sharing training.

Kalamazoo – Holding community baby showers and continuing our very active local safe sleep campaign.

Oakland - Prosecuting attorney's office communicated to area law enforcement that blood alcohol levels should be taken on all infant deaths involving bed-sharing. Local health department provided safe sleep information along with other services to families who experienced infant suffocation deaths. Team submitted information to the Consumer Product Safety Commission to investigate a "3-in-1" port-a-crib where changing portion can be assembled upside down, increasing chance of suffocation.

Saginaw – We are meeting with our local hospital/doctor's offices who give OB or pediatric care to move toward a more uniform message of safe sleep. Staff from hospital and local health department are in the process of rewording the pamphlet on safe sleep given out at the hospital. Also doing community billboard campaign on safe sleep, and adding what to do for safe sleep when traveling and visiting relatives to our ongoing safe sleep campaign.

St Clair – Talked to local residential facility about providing cribs for their residents with infants. Also looking into what local hotels provide for cribs.

Wayne – Infant safe sleep environment educational activities at a local hospital.

Recommendations for Policymakers

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

2. The Children's Cabinet: Collaborate among member agencies and partner with the Michigan Department of Community Health's SIDS and Other Infant Death Program and Michigan professional associations to implement a statewide campaign promoting safe infant sleep environments consistent with the recommendations of the American Academy of Pediatrics.

3. The Michigan Chapter of the American Academy of Pediatrics: Identify a partner with whom to host a "Train the Trainer" event for pediatricians around the state in order to ensure the dissemination of consistent safe infant sleep messages to parents.

Recommendations for Parents and Caregivers

- Practice the recommendations from the Consumer Product Safety Commission (CPSC) for safe infant sleep environments. (See the Section on SIDS)
- Keep all small objects, cords and ropes away from infants and toddlers, including foods like hot dogs, nuts and grapes.
- Don't leave babies in car seats that are not attached to cars out of your sight.

Accidental – Fire

Background

Young children, especially males ages 0-4, are at the greatest risk of dying in a house fire. Children of this age are less likely to recognize the dangers of playing with fire, more likely to hide once a fire breaks out and less likely to have been taught home fire escape. Poverty increases this risk. This is due in part to lower income families being more likely to live in older, wood frame housing; less likely to have working smoke alarms; less likely to have a family escape plan and to practice it; more likely to use alternative heating sources; more likely to have malfunctioning wiring or appliances and more likely to have barriers to escape or rescue. These include having children's bedrooms in basements with small or no access windows, security bars on first floor windows and back doors or windows nailed shut for security or warmth.

A significant portion of the fires that result in child fatalities are started by children in the home playing with incendiary devices such as matches and lighters. Since the CPSC took action in 1994 to require that cigarette lighters be child-resistant, deaths caused by children playing with lighters have decreased by 43%.

The single most important factor in reducing fire fatalities is the presence in the home of a working smoke detector. Three-fifths of fire fatalities nationwide occur in the small number of homes (seven percent) that lack any detectors at all. Although most American homes have at least one smoke alarm, they may not contain good batteries or be in working order at the time of the fire.

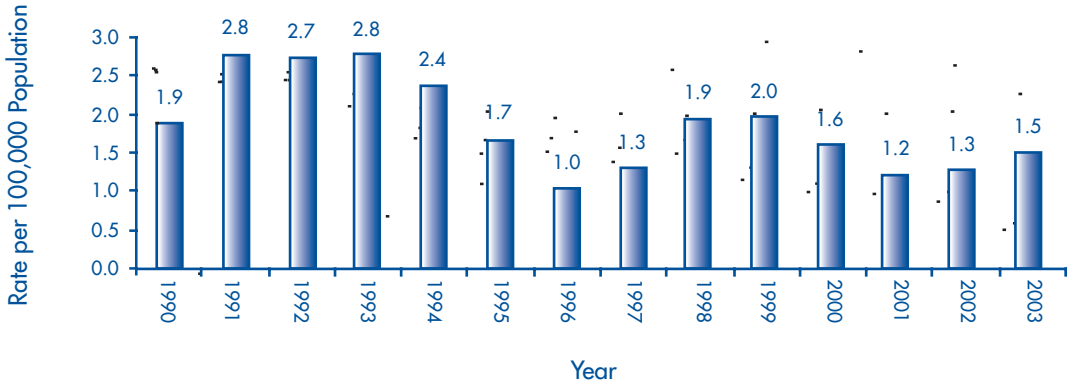
Learning the basics of home fire escape is another proven way to reduce fire fatality risk. Research shows that children, including preschoolers, are capable of learning life-saving means of home fire escape. In 2003, the National Fire Protection Association (NFPA) awarded 23 states grants up to $13,000 to implement Risk Watch, NFPA's successful child injury prevention curriculum, in local schools. A large part of this curriculum deals with fire safety, including age-appropriate lessons on home fire escape for preschool children through age eight. Ten of these states also participated in a program to distribute over 16,000 ten-year lithium battery-powered smoke alarms to high-risk areas.

Major Risk Factors

- Young children's easy access to lighters, matches and candles
- Homes without working smoke detectors
- Black and American Indian males
- Preschool aged children
- Children in low income housing

Michigan Mortality Data from Death Certificates

Figure 34
Michigan Accidental Child Death Rates Due to Fire and Burn, Ages 0-18, 1990-2003

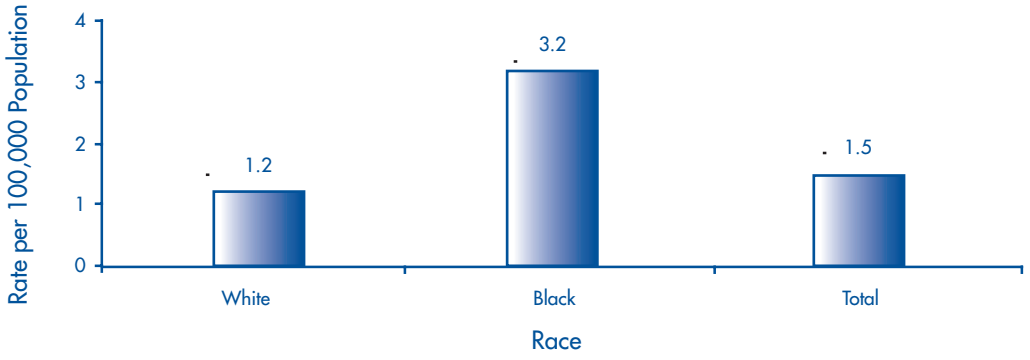


Note: The rate of 1.3 in 2002 represents 34 deaths; the 1.5 in 2003 represents 41 deaths.

Table 47
Number and Percent of Michigan Accidental Child Deaths Due to Fire and Burn by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	26	76.5	22	53.7
Under One Year	1	2.9	0	0.0
1 to 4 Years	10	29.4	7	17.1
5 to 9 Years	7	20.6	10	24.4
10 to 14 Years	7	20.6	5	12.2
15 to 18 Years	1	2.9	0	0.0
Female	8	23.5	19	46.3
Under One Year	1	2.9	1	2.4
1 to 4 Years	3	8.8	7	17.1
5 to 9 Years	3	8.8	4	9.8
10 to 14 Years	1	2.9	6	14.6
15 to 18 Years	0	0.0	1	2.4
Total	**34**	**100.0**	**41**	**100.0**

Figure 35
Michigan Accidental Child Death Rates Due to Fire and Burn by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

Teams reviewed the deaths of 71 children who were fire victims in 2002 and 2003. Teams found more deaths were to males than to females. Forty-four percent were four years old or less, with the largest category being white males ages one to four.

Table 48
Number and Percent of Accidental Fire Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	25	71.4	21	58.3
Under One Year	1	2.9	0	0.0
1 to 4 Years	11	31.4	6	16.7
5 to 9 Years	6	17.1	8	22.2
10 to 14 Years	4	11.4	6	16.7
15 to 18 Years	3	8.6	1	2.8
Female	10	28.6	15	41.7
Under One Year	3	8.6	1	2.8
1 to 4 Years	1	2.9	8	22.2
5 to 9 Years	3	8.6	5	13.9
10 to 14 Years	3	8.6	0	0.0
15 to 18 Years	0	0.0	1	2.8
Total	**35**	**100.0**	**36**	**100.0**

Local teams determined the socio-economic status of the child fire victims to be "low" in 79% of the cases reviewed.

Table 49
Number and Percent of Accidental Fire Deaths Reviewed by Fire Source

Fire Source	2002		2003	
	Number	Percent	Number	Percent
Child Playing w/Lighter or Matches	10	28.6	5	13.9
Cooking (Stove)	9	25.7	7	19.4
Wiring/Christmas Lights	8	22.9	14	38.9
Gas Explosion	3	8.6	0	0.0
Other	3	8.6	4	11.1
Unknown	2	5.7	6	16.7
Total	**35**	**100.0**	**36**	**100.0**

Although not an item currently collected on the CDR case report form, it was noted in the narratives of five of the fire deaths reviewed that security bars on windows hindered victims' escape from the fire.

Although there appears to be a sharp increase in deaths caused by faulty wiring in 2003, the 14 deaths in that category were actually from only five separate fires. One wiring death killed seven children, one killed three children and another killed two children.

In all 16 cases involving cooking, it was reported by the teams that the person using the stove had been careless, either by falling asleep, leaving the kitchen for an extended period and/or being under the influence of alcohol at the time.

When answering whether they believed supervision to have been adequate at the time of the fire, the teams answered "no" or "unsure" in 61% of the 71 fire deaths reviewed.

In 12 of the 15 cases where children were known to have been playing with matches or lighters, lack of supervision was deemed as a contributing factor. In seven of these 15 cases, the child was previously known to be a fire setter.

The Department of Human Services conducted an investigation in 28% of the fire cases reviewed, substantiating for abuse or neglect in 45% of those. Most of these resulted in the provision of services, while two out of the nine substantiations involved removing other children from the home.

In nearly half the cases (35), it was noted that smoke alarms were present in the home at the time of the fire. However, in only nine cases did the alarms function properly. This was usually because the smoke alarms did not contain working batteries at the time.

Table 50
Number and Percent of Fire Deaths Reviewed by Smoke Alarm Functioned Properly

Smoke Alarm Functioning	2002		2003	
	Number	Percent	Number	Percent
Yes	2	5.7	7	19.4
No	25	71.4	27	75.0
No Answer	8	22.9	2	5.6
Total	**35**	**100.0**	**36**	**100.0**

As with the previous two types of accidental death, teams found child fire deaths to be highly preventable. They indicated that the death was either probably or definitely preventable in 90% of the 71 fire cases reviewed.

Local Initiatives to Prevent Child Deaths

Teams proposed 58 local prevention activities related to child fire deaths. Action was taken on 31 of these. Examples of these include:

Kalamazoo – Met with local housing inspectors to assist with developing methods to improve community response to situations such as families living in condemned homes. Discussed with DHS reps suggestion that vouchered rent be tied to regular inspection of dwellings. Local DHS staff will take idea to state for further discussion. Got information out in the media regarding need for smoke detectors and how to obtain them free from SAFE KIDS.

St. Clair - Have begun discussions with county emergency management regarding community education about smoke detectors and fire safety in homes.

Recommendations for Policymakers

1. The Michigan Department of Community Health, the Michigan State Police and the Michigan Department of Labor and Economic Growth: Campaign to promote local efforts to increase the number of lithium-powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.

2. The Michigan Department of Education and the Michigan Department of Human Services: Ensure that all school districts and child care organizations offer fire safety education for young children, especially in preschool and child care settings.

Recommendations for Parents and Caregivers

- Install smoke detectors outside every sleeping area and on every floor of your home; test them monthly and keep fresh batteries in them if they are not hard-wired or equipped with 10-year lithium batteries.

- Keep matches, lighters and candles well out of the reach of children and teach your family how to escape from your home in case of a fire.

- Never leave your cooking unattended.

Accidental – Drowning

Background

According to the CDC, drowning remains the second leading cause of injury-related death among children ages 1 to 14 in the U.S., despite a continuing decrease in the child drowning rate over the years.

Males are at a much higher risk of drowning than females. One study found that on average, nearly three-quarters of all drowning victims are male. Toddlers, especially boys under age four, are at highest risk of drowning. Very young children are curious near water but are not able to comprehend the potential dangers. They often do not splash or call for help when they get into trouble in the water.

Most child drownings occur when a supervising adult is distracted. Also, if there are multiple adults in the area, a diffusion of responsibility can occur for watching the children. Drowning experts now recommend that one adult at a time take responsibility for maintaining constant visual supervision of children in or near the water.

Age plays a large role in determining the most likely place for children to drown. Babies most often drown in bathtubs or other areas in the home (toilets, five-gallon buckets, washtubs) when left unattended. Toddler drownings most often occur in swimming pools or backyard ponds. Often, young children who drown in pools were last seen inside the home or just outside of the home (not necessarily near the water), and had been out of sight of the caretaker for less than five minutes when it was discovered that they were missing. Older children most often drown in open bodies of water (lakes, rivers, oceans, gravel pits) while swimming, playing or boating.

A recent study by the National SAFE KIDS Campaign used data from 17 states conducting child death reviews, as well as surveying 564 parents of children 14 years old and younger. Among their conclusions were: parents are overconfident about their children's safety around water and their swimming abilities; multiple layers of protection must be installed around home pools and they must be used consistently; adults must increase the quality of their supervision of children around water (nearly 9 in 10 of the deaths reviewed occurred while the child was supposedly being supervised).

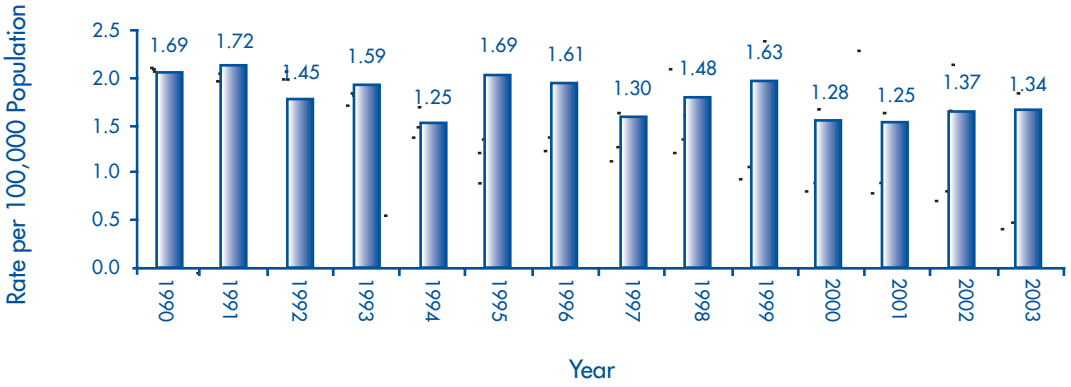
In Michigan, building codes require specifics for fencing around home pools. In recent years, the enforcement of these codes has fallen to localities, which rarely pursue this enforcement. They often point to a lack of resources and lack of code enforcement experience in their personnel as reasons why it is not actively pursued in their area.

Personal flotation devices (PFDs or life jackets) are very effective at preventing drowning for all ages, especially for children on boats or who are playing in or near open bodies of water, regardless of whether the child is thought to be a good swimmer.

Major Risk Factors

- Lapse in adult supervision, however brief
- Children under age four and males
- Unlocked gates and inadequate fencing of pools and ponds
- Children not wearing personal flotation devices

Figure 36
Michigan Accidental Child Death Rates Due to Drowning, Ages 0-18, 1990-2003

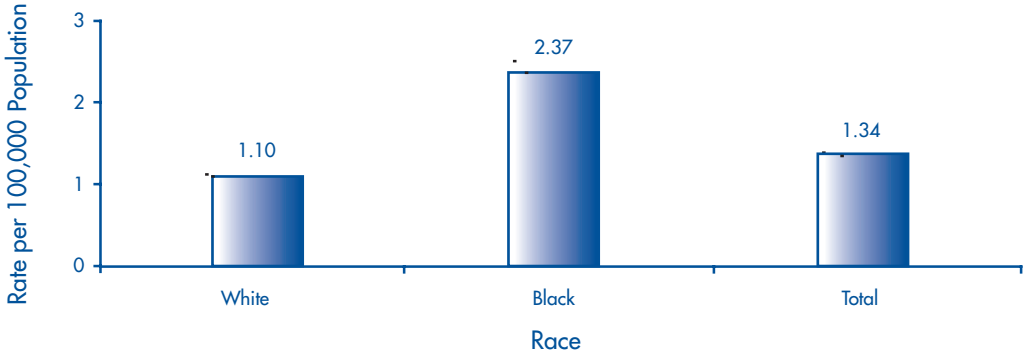


Note: The rate of 1.37 in 2002 represents 37 deaths; the 1.34 in 2003 represents 36 deaths.

Table 51
Number and Percent of Michigan Accidental Child Deaths Due to Drowning by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	29	78.4	26	72.2
Under One Year	2	5.4	0	0.0
1 to 4 Years	8	21.6	5	13.9
5 to 9 Years	7	18.9	3	8.3
10 to 14 Years	6	16.2	3	8.3
15 to 18 Years	6	16.2	15	41.7
Female	8	21.6	10	27.8
Under One Year	2	5.4	4	11.1
1 to 4 Years	4	10.8	4	11.1
5 to 9 Years	1	2.7	2	5.6
10 to 14 Years	1	2.7	0	0.0
15 to 18 Years	0	0.0	0	0.0
Total	**37**	**100.0**	**36**	**100.0**

Figure 37
Michigan Accidental Child Death Rates Due to Drowning by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

Local teams reviewed 64 child drownings in 2002 and 2003. They found an increased risk for male children, who accounted for 80% of the drowning deaths reviewed. Children ages one to four were found, as they are nationally, to be at increased risk. But local teams also reported an equally increased risk for youths ages 15-18.

Table 52
Number and Percent of Accidental Drowning Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	31	81.6	20	76.9
Under One Year	3	7.9	1	3.8
1 to 4 Years	8	21.1	6	23.1
5 to 9 Years	6	15.8	3	11.5
10 to 14 Years	5	13.2	2	7.7
15 to 18 Years	9	23.7	8	30.8
Female	7	18.4	6	23.1
Under One Year	2	5.3	3	11.5
1 to 4 Years	2	5.3	2	7.7
5 to 9 Years	1	2.6	1	3.8
10 to 14 Years	1	2.6	0	0.0
15 to 18 Years	1	2.6	0	0.0
Total	**38**	**100.0**	**26**	**100.0**

Table 53
Number and Percent of Accidental Drowning Deaths Reviewed by Location

Place of Drowning	2002		2003	
	Number	Percent	Number	Percent
Lake, River or Pond	18	47.4	11	42.3
Bathtub	5	13.2	3	11.5
Swimming Pool	14	36.8	9	34.6
Other	1	2.6	3	11.5
Total	**38**	**100.0**	**26**	**100.0**

Seven of the nine infants who drowned were in bathtubs at the time, over half of the toddlers (ages one to four) drowned in pools and over half of the older children (ages five to 18) drowned in open bodies of water.

Three of the eight bathtub drownings involved babies being left alone while in infant bath seats. An older infant gained access to the tub with a toddler sibling without anyone in the house noticing. One infant awoke from a nap in a dry tub and turned the water on. The other two infants were known to be bathing but were left alone by caregivers long enough to drown. A school-aged child with a seizure disorder drowned in the bathtub after a presumed seizure episode.

Local teams reported that DHS investigated six of the eight cases of bathtub drowning. Five of the six resulted in CPS substantiations. Other children were removed from the home in two of the cases, with a third having had children removed prior to and after the incident. The families involved in the bathtub drownings had prior contact with CPS* in four of the eight total bathtub drowning cases. In two of those cases, the prior CPS involvement was with the child who died.

Of the 23 child drownings in pools, six children were unattended when they entered the pool area through a gate. Four of these gates were known to have been unlocked at the time. In seven of the 23 cases, the pool was known to have not been completely fenced.

In nine of the 16 pool-related cases that included narrative on how the drowning occurred, there were multiple people participating in water activity at the time. In most of these cases, supervising adults simply lost track of one of the children long enough for them to drown. Of the other seven pool cases with detailed narrative, five of the victims had started out inside the house when supervisors fell asleep or became distracted long enough for the child to get outside to the pool. In another case, the mother knew the child was playing outside, but didn't think about the possibility of him entering the pool, as it was winter-time. The last pool case where detail was provided was of a teenager who drowned in a hotel pool while swimming alone.

Of the four deaths reviewed in "other" drowning locations: one was a wading pool, one was a septic tank, one was a landscape pond and one was a five–gallon bucket.

Only one of the five children who were boating at the time of the incident had been wearing a PFD. That child's life jacket was not properly snapped together and came off once he was in the water.

In only eight of the 64 drowning deaths reviewed did the team believe that the supervision of the children had been adequate at the time. Teams also saw this type of child death as being highly preventable. They indicated that the drownings were either probably or definitely preventable in 94% of the cases.

* The past CPS involvement refers to any time prior to the death. It may have been involvement with a parent when they were a child.

Local Initiatives to Prevent Child Deaths

Review teams proposed 38 prevention activities related to child drownings. Action was taken on 15 of these, including:

Muskegon – A Water Safety Committee was formed as a result of our drowning reviews. The committee has developed: a movie trailer for local theaters, a sign at the beach, bookmarks distributed in schools, placemats distributed in restaurants, presentations at schools and local YMCA, kids water safety awareness day, PSAs for the radio, water safety page added to county health department web site and an article in the local chamber of commerce newsletter. An adjoining county also formed their own similar task force with a web site, water safety games and Corps of Engineers pier and beach safety video in the works. Since our committee has been working to educate the public, we have had no drowning deaths in Lake Michigan in our county.

Ottawa – We formed a RIPTIDE group looking at preventing deaths when the surf is high in Lake Michigan. We did not initiate this action, as it is a collaborative between Muskegon and Ottawa Counties. We are attending meetings and working on activities.

Saginaw – Wrote newspaper article on pool safety.

Van Buren – Article written in local paper regarding open bodies of water around the home including landscape ponds, etc. to make community aware of the dangers.

Wayne – We talked with the CPSC regarding infant bath seats. Since parents often think they can use them to hold the baby in place in the water while they leave the bathroom to do other things, we recommended that they either be banned altogether or at least have the inattention warning moved to the front of the seat in bright red letters.

Recommendations for Policymakers

1. The Michigan Municipal League, Michigan Association of Counties and Michigan Township Association: Work with communities to enforce the Michigan Construction Codes that require local units of government to adopt and enforce pool-fencing regulations.

2. The Michigan Department of Human Services Office of Children and Adult Licensing: Promulgate child care licensing rules for barriers to pools, hot tubs or open bodies of water at regulated child care facilities.

3. The Department of Natural Resources, Michigan Municipal League, Michigan Association of Counties, Michigan Township Association and Michigan Parks and Recreation Association: Work with local communities to provide adequate signage and appropriate rescue equipment in areas of waterfront and shorelines accessible to the public. Signage should include warnings and appropriate safety precautions.

Recommendations for Parents and Caregivers

- When you are near any pool or body of water, always designate one adult to keep sight of all the children, at all times.
- Take the time to locate water sources in the areas surrounding your home (neighbor's pools, landscape ponds, etc) and make sure there are barriers in place that will keep your children away from them.
- Don't leave standing liquid in five–gallon buckets, washtubs, wading pools or any other containers around your home if you have toddlers.
- Always ensure that your children are wearing personal floatation devices when participating in recreational activities on open water (boating, jet-skiing, water-skiing, etc), regardless of age or perceived ability to swim.

Accidental – Firearm and Weapon

Background

Unintentional injuries from firearms represent less than two percent of all firearm deaths in the U.S., but of this two percent, children and adolescents are involved 55% of the time. The majority of these deaths occur when children are playing with or showing the weapons to friends.

Michigan law requires that all guns sold have locking devices on them, be sold with a gun case or storage container that can be secured and the dealer must provide free written information on the safe use and storage of firearms in the home environment. The dealer must also post a notice that states that a person "may be criminally and civilly liable for any harm caused by a person less than 18 years of age who lawfully gains unsupervised access to your firearm if unlawfully stored."

Major Risk Factors

- Easy availability of and access to firearms by children
- Children with little or no adult supervision

Michigan Mortality Data from Death Certificates

Of the six deaths that occurred in 2002 and 2003, five were male and one was female; four were white and two were black; and one was under one year of age, one was between one and four years, one was between 10 and 14 years, and three were between 15 and 18 years.

Figure 38
Michigan Accidental Child Deaths Due to Firearms and Weapons, Ages 0-18, 1990-2003

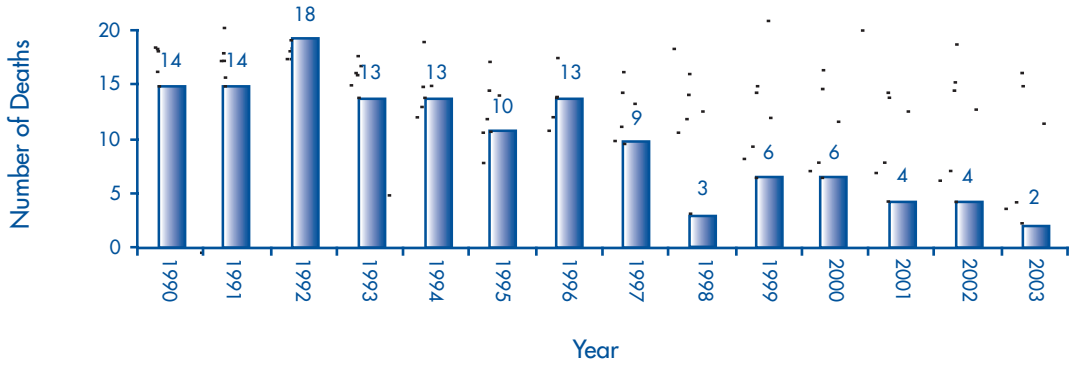
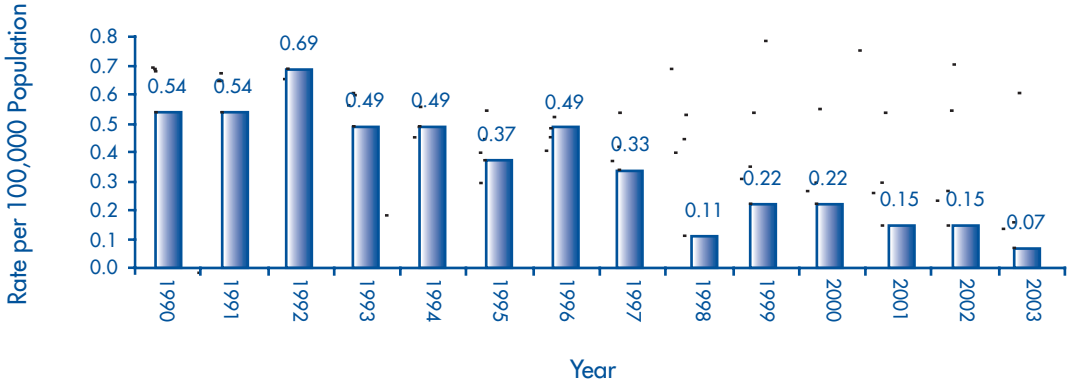


Figure 39
Michigan Accidental Child Death Rates Due to Firearms and Weapons, Ages 0-18, 1990-2003



Note: The rate of 0.15 in 2002 represents 4 deaths; the 0.07 in 2003 represents 2 deaths.

Child Death Review Team Findings from CDR Case Reports

Six reviews were conducted of child deaths that resulted from firearm or other weapon injuries that were unintentional. Two of these reviews, however, were turned in by two different counties on the same case. One was the county of residence of the child and the other was the county where death was pronounced. For the purposes of this section, the information will refer to the five children who died, not the six reviews.

The ages of the weapons victims were five months, three, 12, 13 and 18. Two cases involved handguns, one was a rifle, one was a shotgun and one was a knife.

The circumstances included two hunting incidents, an unintentional self-inflicted wound that resulted from a struggle, a child playing with a firearm found in his home and an unintentional discharge of a weapon due to improper storage. In the last two cases, the firearms were not stored in a locked cabinet and there were no trigger locks on the guns.

In the four cases involving minors, teams judged supervision to have been inadequate at the time of the incidents in three cases and in the other, the team was unsure about supervision adequacy. All five deaths were deemed "definitely" preventable.

Local Initiatives to Prevent Child Deaths

One county noted that they initiated educational activities in schools and proposed more emphasis on adult supervision in hunter safety classes. Another county wrote a letter to the local paper asking that the gun safety article that was published right after the death in their community be re-run every year just before hunting season.

Recommendations for Policymakers

1. The Michigan Attorney General's Office: Ensure statewide enforcement of the current laws that require:
   a. Federally licensed firearm dealers to provide, at the point of sale, written materials on gun safety and the proper storage of guns in homes with children; and
   b. Federally licensed firearm dealers are not to sell a firearm in Michigan without a commercially available trigger lock or other device, designed to disable the firearm and prevent it from discharging.
2. The Michigan Legislature: Enact legislation that provides specific criminal penalties to adults who are negligent in the safekeeping of guns that are used to injure or kill children.
3. The Michigan Department of Education: Take the lead in developing an education plan for family gun safety.

Recommendations for Parents and Caregivers

- If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.
- Assess the safety of firearms storage of the homes that your children visit.

Accidental – Other Causes

Background

This section addresses unintentional injury deaths not addressed in previous sections, such as poisoning, falls and injuries sustained when the victims were crushed or struck by objects.

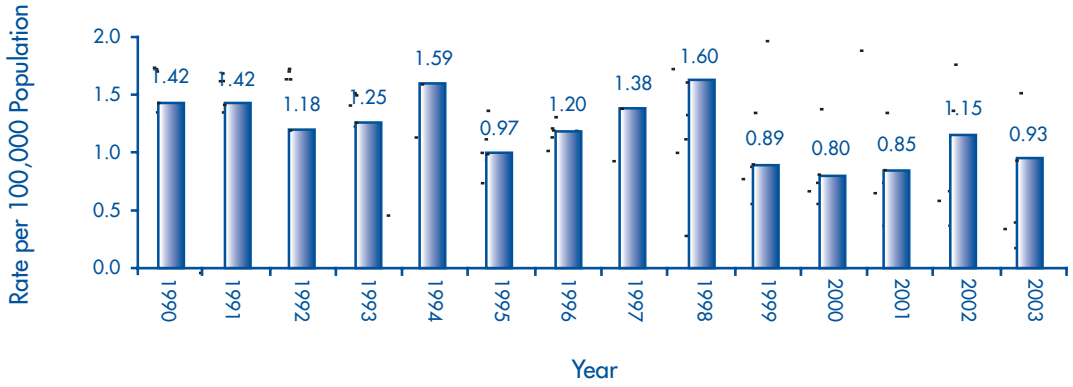
Poisoning deaths can occur due to access by young children to toxic substances and the inattention of parents or other caregivers. Carbon monoxide poisonings usually occur overnight, involving generators or other types of CO producing appliances. Teens unintentionally poison themselves by overdosing on prescription medications or illegal drugs in an attempt to get high. More than 90% of poisonings in the U.S. occur in the home.

Deaths due to crushing injuries typically occur when large, heavy objects fall onto a child. Being struck by moving objects can also cause fatal injuries in children.

Major Risk Factors

- Lack of adequate supervision from caregivers
- Homes that are not properly child-proofed
- Teens who can access strong prescription medications

Figure 40
Michigan Accidental Child Death Rates Due to Other Causes, Ages 0-18, 1990-2003



Note: The rate of 1.15 in 2002 represents 31 deaths; the 0.93 in 2003 represents 25 deaths.

Table 54
Number and Percent of Michigan Accidental Child Deaths Due to Other Causes by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	19	61.3	19	76.0
Under One Year	2	6.5	3	12.0
1 to 4 Years	3	9.7	6	24.0
5 to 9 Years	1	3.2	1	4.0
10 to 14 Years	2	6.5	3	12.0
15 to 18 Years	11	35.5	6	24.0
Female	12	38.7	6	24.0
Under One Year	4	12.9	2	8.0
1 to 4 Years	1	3.2	0	0.0
5 to 9 Years	3	9.7	1	4.0
10 to 14 Years	1	3.2	0	0.0
15 to 18 Years	3	9.7	3	12.0
Total	**31**	**100.0**	**25**	**100.0**

Child Death Review Team Findings from CDR Case Reports

Teams reviewed the deaths of 41 children due to unintentional injuries of the type not covered in previous sections.

Table 55
Number and Percent of Accidental Deaths Reviewed Due to Other Causes by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	9	47.4	16	72.7
Under One Year	0	0.0	2	9.1
1 to 4 Years	2	10.5	3	13.6
5 to 9 Years	0	0.0	1	4.5
10 to 14 Years	1	5.3	1	4.5
15 to 18 Years	6	31.6	8	36.4
19 Years and Older	0	0.0	1	4.5
Female	10	52.6	6	27.3
Under One Year	1	5.3	1	4.5
1 to 4 Years	1	5.3	0	0.0
5 to 9 Years	2	10.5	0	0.0
10 to 14 Years	2	10.5	0	0.0
15 to 18 Years	4	21.1	5	22.7
19 Years and Older	0	0.0	0	0.0
Total	**19**	**100.0**	**22**	**100.0**

Table 56
Number and Percent of Accidental Deaths Reviewed Due to Other Causes

Cause	2002		2003	
	Number	Percent	Number	Percent
Poisoning	9	47.4	12	54.5
Fall	4	21.1	1	4.5
Crushed/Struck by Object	4	21.1	5	22.7
Other	2	10.5	4	18.2
Total	**19**	**100.0**	**22**	**100.0**

Poisoning

Counter to what most people would guess, teams found that infants and toddlers were not the age groups at greatest risk of unintentional poisoning. Only one of the poisoning victims was less than four years old, while nearly three-quarters of the victims were ages 15 or older. Accidentally overdosing while trying to get high accounted for most of these adolescent poisoning deaths. Of the 12 unintentional overdose victims who were attempting to get high, all but one were 15 to 18 years of age. One was nine years old.

Of all 21 unintentional poisoning deaths reviewed, nine were prescription drugs, six were illegal drugs and six were due to carbon monoxide. Two victims were black, 17 were white and two were American Indian. The carbon monoxide victims ranged in age from six to 18. Of the nine prescription medication overdoses: two were their parents' medications; one bought it from another child who got it from his parent; two bought them from dealers; one got them from another relative; two were accidental overdoses in a hospital setting and one case did not contain information about the origins of the drugs.

Falls

Five children died from injuries sustained in falls. Four were 15 to 18 years of age and one was two years old. One fell down a flight of stairs, one fell from standing height striking their head on a curb, one fell while running down a paved sloping surface, one fell down a hill striking an object at the bottom and one fell from a garage roof. In two of the four adolescent cases, the teens had been drinking prior to the incident.

Crushed/Struck by Object

There were nine cases of crushing or striking injury death reviewed. Five children were six years of age or younger, the other four were 13-18 years of age. The objects causing the injuries were a farm wagon, a tree, a television, an adult's body, an older child's body, a bull, a heavy wooden box, a boat propeller and a pole.

Other

Of the six cases under "other," two were young children that were left in a hot car and died of hyperthermia, one was a teen that died years later from complications of a diving incident, one was a toddler that bled to death after breaking through a window, one was a disabled youth who died while lying prone in restraints and one was a youth involved in a farming incident.

Teams believed that 80% of the 41 total deaths reviewed in this section were either probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Review teams proposed 22 prevention initiatives regarding other types of unintentional injury death, and action was taken on six of these. They included:

Barry – Police and prosecuting attorney's office are stepping up investigations on methadone use.

Charlevoix - Putting posters up, brochures in offices which advocate child safety and lack of supervision of children in cars.

Hillsdale – A community-wide farm safety program was held.

Lapeer – More education in the media about carbon monoxide poisoning.

Osceola – Education provided to agencies, community members on Amish culture.

Recommendations for Parents and Caregivers

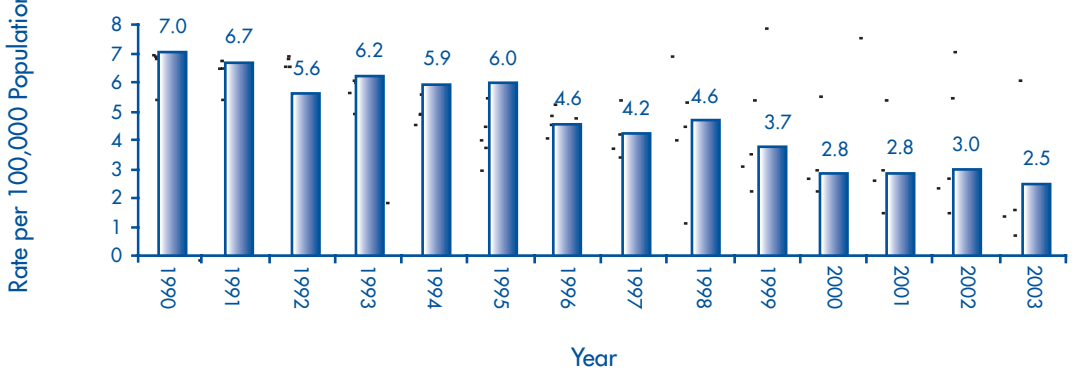
- Be sure that all areas of the house are "child proofed," including stairs, electrical outlets, storage cabinets and medication bottles.
- If you suspect that your child might be abusing illegal or prescription drugs, intervene immediately. Even "experimenters" can accidentally overdose.

Child Deaths
IN MICHIGAN
section six

HOMICIDES

Overview of Child Homicides, Ages 0-18

Figure 41
Michigan Child Homicide Rates, Ages 0-18, 1990-2003

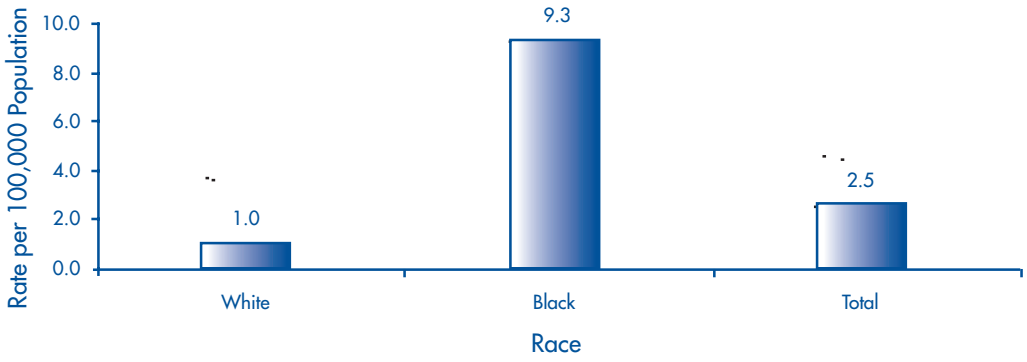


Note: The rate of 3.0 in 2002 represents 80 deaths; the 2.5 in 2003 represents 67 deaths.

Table 57
Number and Percent of Michigan Child Homicides by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	52	65.0	41	61.2
Under One Year	5	6.3	3	4.5
1 to 4 Years	10	12.5	8	11.9
5 to 9 Years	0	0.0	2	3.0
10 to 14 Years	6	7.5	3	4.5
15 to 18 Years	31	38.8	25	37.3
Female	28	35.0	26	38.8
Under One Year	5	6.3	4	6.0
1 to 4 Years	5	6.3	5	7.5
5 to 9 Years	5	6.3	3	4.5
10 to 14 Years	3	3.8	4	6.0
15 to 18 Years	10	12.5	10	14.9
Total	**80**	**100.0**	**67**	**100.0**

Figure 42
Michigan Child Homicide Rates by Race, Ages 0-18, 2003



Homicide – Firearm and Weapon

Background

Most victims of firearm and other weapon homicides in the U.S. are adolescents. It is the number one cause of violence-related injury death for youths ages 15 and over. Over the last decade, an average of about nine American youths were killed daily. In 2003, the Youth Risk Behavior Surveillance Survey reported that about 17% of 9th through 12th grade students indicated that they had carried a firearm within the previous 30 days for self-defense or to settle disputes. The prevalence of having carried a weapon was about four times higher for males than for females.

Nationally, homicide is the second leading cause of death among young people ages 15 to 19. Youth homicide is a serious problem in large urban areas, especially among black males. Homicide is the number one cause of death for black teens. Yet when socio-economic status is held constant, differences in homicide rates by race become insignificant. Major contributing factors in addition to poverty include easy access to handguns, involvement in drug and gang activity, family disruption and school failure. These homicides usually occur in connection with an argument or dispute. They are almost always committed by acquaintances of the same gender, race and age, using inexpensive, easily acquired handguns.

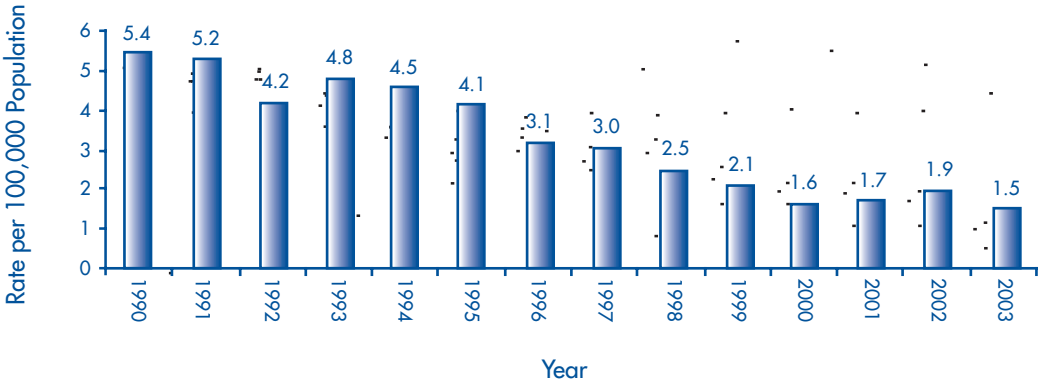
There are a myriad of prevention strategies available to communities to reduce gun violence among youth. Many of these make sense and are easy to implement. However, research indicates that preventing youth violence requires complex, long-term solutions that should be focused in targeted neighborhoods where the majority of these homicides occur. Violence prevention research has demonstrated that strategies are most effective when they identify high-risk children in their earliest years and intervene at multiple levels through collaborative community partnerships.

Major Risk Factors

- Easy availability of and access to firearms
- Youths living in neighborhoods with high rates of poverty, social isolation and family violence
- Youths active in drug and gang activity, with prior histories of early school failure, delinquency and violence
- Youths with little or no adult supervision
- Prior witnessing of violence

Michigan Mortality Data from Death Certificates

Figure 43
Michigan Child Homicide Rates Due to Firearms and Weapons, Ages 0-18, 1990-2003

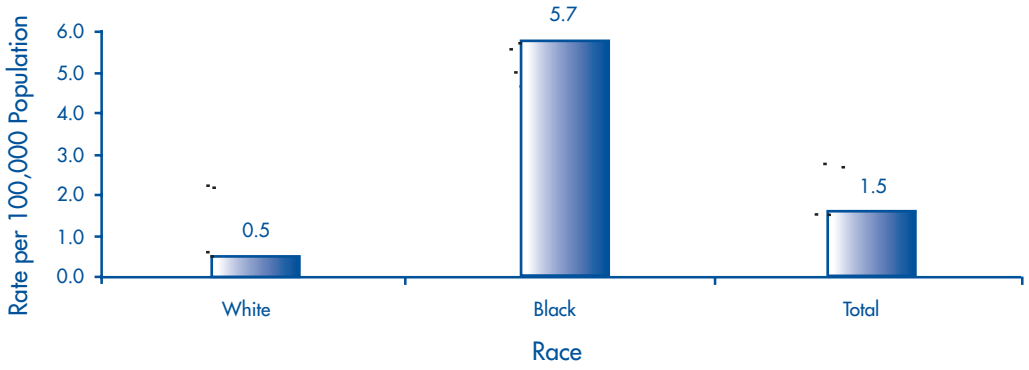


Note: The rate of 1.9 in 2002 represents 52 deaths; the 1.5 in 2003 represents 40 deaths.

Table 58
Number and Percent of Michigan Child Homicides Due to Firearms and Weapons by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	35	67.3	29	72.5
Under One Year	0	0.0	0	0.0
1 to 4 Years	1	1.9	1	2.5
5 to 9 Years	0	0.0	2	5.0
10 to 14 Years	6	11.5	2	5.0
15 to 18 Years	28	53.8	24	60.0
Female	17	32.7	11	27.5
Under One Year	0	0.0	0	0.0
1 to 4 Years	3	5.8	1	2.5
5 to 9 Years	5	9.6	1	2.5
10 to 14 Years	1	1.9	2	5.0
15 to 18 Years	8	15.4	7	17.5
Total	**52**	**100.0**	**40**	**100.0**

Figure 44
Michigan Child Homicide Rates Due to Firearms and Weapons by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed a total of 76 child deaths in 2002 and 2003 ruled to be homicides from firearms or other weapons. Sixty-five percent of these deaths reviewed were to children between the ages of 15 and 18. Seventy-one percent of the deaths were to black children. Approximately three quarters of the deaths were to children who were deemed to be of low socio-economic status.

Table 59
Number and Percent of Child Homicides from Weapons Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	16	55.2	34	72.3
Under One Year	0	0.0	0	0.0
1 to 4 Years	2	6.9	2	4.4
5 to 9 Years	1	3.4	1	2.2
10 to 14 Years	4	13.8	2	4.4
15 to 18 Years	9	31.0	29	61.7
Female	13	44.8	13	27.7
Under One Year	0	0.0	0	0.0
1 to 4 Years	3	10.3	1	2.2
5 to 9 Years	2	6.9	4	8.9
10 to 14 Years	1	3.4	2	4.4
15 to 18 Years	7	24.1	4	8.9
19 Years and Older	0	0.0	2	4.4
Total	**29**	**100.0**	**47**	**100.0**

Records show that CPS had previously been involved with the child and/or family in 35 of the 76 deaths. When known, a handgun was the weapon used approximately two-thirds of the time.

Table 60
Number and Percent of Child Homicides from Weapons Reviewed by Type of Weapon

Type of Weapon	2002		2003	
	Number	Percent	Number	Percent
Handgun	21	72.4	28	59.6
Rifle	1	3.4	1	2.1
Shotgun	2	6.9	2	4.3
Muzzleloader	0	0.0	1	2.1
Unknown Firearm	1	3.4	7	14.9
Knife	3	10.3	6	12.8
Unknown Sharp	0	0.0	1	2.1
Blunt Force	0	0.0	1	2.1
Unknown Weapon	1	3.4	0	0.0
Total	**29**	**100.0**	**47**	**100.0**

Table 61
Number and Percent of Child Homicides from Weapons Reviewed by Person Who Inflicted the Injury

Relationship	2002		2003	
	Number	Percent	Number	Percent
Parent	6	20.7	6	12.8
Parent's Partner	1	3.4	1	2.1
Sibling	1	3.4	2	4.3
Acquaintance	11	37.9	11	23.4
Friend	6	20.7	6	12.8
Stranger	1	3.4	11	23.8
Police Officer	0	0.0	2	4.3
Unknown	3	10.3	8	17.0
Total	**29**	**100.0**	**47**	**100.0**

Ten (four sibling groups) of the 76 child homicides due to firearms or weapons were reported by MDHS to NCANDS as being due to child abuse or neglect. The mother was the perpetrator in two of the sibling-group deaths, fatally shooting the children and then shooting herself. In the other two events, the father was the perpetrator and was arrested and charged with murder.

The teams concluded that firearm and other weapon homicides were probably or definitely preventable 80% of the time.

Local Initiatives to Prevent Child Deaths

Teams proposed 20 firearm homicide prevention activities, initiating action on 16 of the proposals:

Iron County - Team contacted local schools about providing domestic violence education to the girls.

Midland County – Team initiated a gun-lock giveaway, secured a gun safety video tape for middle school students, involved the media (newspaper and television) in highlighting gun safety, and hung posters about the ASK program.

Wayne County - Team identified five prevention initiatives: Conflict and anger resolution activities in the school; educating women about domestic violence, firearm safety and youth violence prevention in the media; and the initiation of a community safety project by Law Enforcement.

Recommendations for Policymakers

1. The Michigan State Police: Spearhead an initiative to partner with communities and local law enforcement experiencing high rates of teen homicides, to identify the neighborhoods most at risk for gun homicides, and implement comprehensive violence-prevention initiatives.

2. Michigan Courts: Support enforcement of laws that require gun safety mechanisms on all firearms at the point of sale.

3. The Michigan Department of Community Health and the Michigan Department of Human Services: Work with local Community Mental Health to recognize and ensure treatment for the mental health needs of families.

4. The Michigan Department of Community Health: Partner with the Michigan Chapter of the American Academy of Pediatrics to disseminate and implement the AAP's Violent Injury Prevention Program (VIPP) in primary care offices around the state.

Recommendations for Parents and Caregivers

- If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.
- Assess the safety of firearms storage of the homes that your children visit.
- Be knowledgeable about your child's activities when they are with friends.
- Recognize and seek professional help if your child displays violent behavior.

Homicide – Child Abuse and Neglect

Background

In 2002, NCANDS reported that child maltreatment fatalities were most often the result of neglect (38%) followed by physical abuse (30%) and then combinations of maltreatment types (29%).

In cases of fatal neglect, the child's death usually results from a caregiver's failure to act. The neglect may be chronic, such as extended malnourishment, or acute, such as an infant who drowns because she is left unsupervised in the bathtub.

Many child maltreatment deaths from physical abuse involve children receiving injuries to their heads. Known as abusive head trauma, these injuries occur when a child's head is slammed against a surface, is severely struck or when a child is violently shaken. There have been major improvements in the ability to diagnose abusive head trauma and in investigators' abilities to recognize when a caregiver's explanation does not match the severity of the injuries. For example, it is now widely accepted that falls from short heights or a child being accidentally dropped do not cause extensive, severe head injuries.

The next most common causes of physical abuse fatality are punches or kicks to the abdomen, leading to internal bleeding. Other forms of fatal physical abuse include immersion in hot water (scalding), drowning and smothering.

The reason most often given by caretakers who fatally injure their children is that they lost patience when the child would not stop crying. Other common reasons given by the abusers include toilet training issues, fussy eating and disobedient behavior.

Young children are the most vulnerable victims. National statistics show that children under seven years of age account for 88% of all maltreatment deaths. Of those deaths, roughly half were to children under the age of one with males accounting for 61% of these infant fatalities. Michigan's numbers are similar: for the maltreatment deaths reported to NCANDS in 2002, 90% of victims were under age seven, 60% of those were under age one and 46% of those infant victims were male.

Nationally, fathers and mothers' boyfriends are most often the perpetrators in the physical abuse deaths; mothers are more often at fault in the neglect fatalities. In 2002, one or both parents were involved in 79% of child abuse or neglect fatalities. Fatal abuse is often interrelated with poverty, domestic violence and substance abuse. A study by the National Center on Addiction and Substance Abuse found that children of substance-abusing parents were almost three times more likely to be abused and more than four times more likely to be neglected than children of parents who are not substance abusers. Other contributing factors include the immaturity of parents, lack of parenting skills, unrealistic expectations about children's behavior and capabilities and social isolation.

National studies report that it is difficult to predict a fatal abuse event. In the U.S., the majority of child victims and their perpetrators had no prior contact with CPS at the time of the death, yet many children had previous injuries that were not reported.

Major Risk Factors

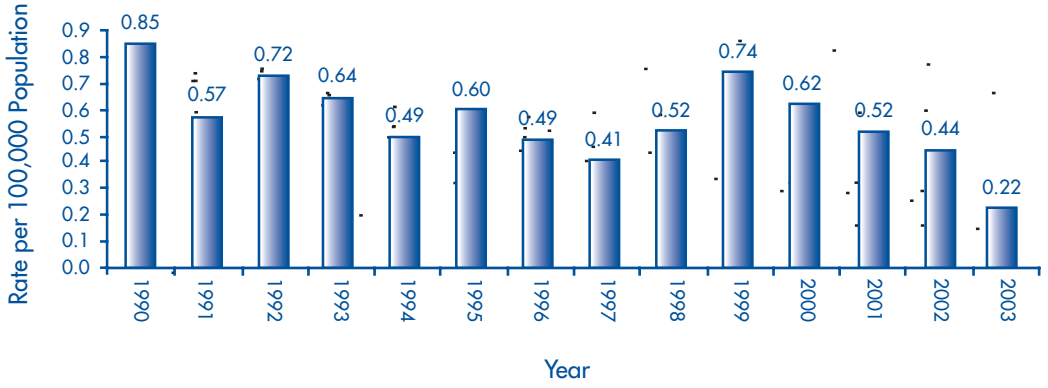
- Younger children, especially under the age of five
- Parents or caregivers who are under the age of 30
- Low income, single-parent families experiencing major stresses
- Children left with male caregivers who lack emotional attachment to the child
- Children with emotional and health problems
- Lack of suitable child care

- Substance abuse among caregivers
- Parents and caregivers with unrealistic expectations of child development and behavior

Michigan Mortality Data from Death Certificates

In Michigan as well as nationally, the actual number of child abuse and neglect deaths is estimated to be much higher than what is reported by death certificate data.

Figure 45
Michigan Child Homicide Rates Due to Abuse and Neglect, Ages 0-18, 1990-2003



Note: The rate of 0.44 in 2002 represents 12 deaths; the 0.22 in 2003 represents 6 deaths.

Table 62
Number and Percent of Michigan Child Homicides Due to Child Abuse and Neglect by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	10	83.3	2	33.3
Under One Year	4	33.3	1	16.7
1 to 4 Years	6	50.0	1	16.7
5 to 9 Years	0	0.0	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	0	0.0	0	0.0
Female	2	16.7	4	66.7
Under One Year	1	8.3	2	33.3
1 to 4 Years	1	8.3	2	33.3
5 to 9 Years	0	0.0	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	0	0.0	0	0.0
Total	**12**	**100.0**	**6**	**100.0**

Child Death Review Team Findings from CDR Case Reports

In 2002 and 2003, CDR teams reviewed 42 cases of child abuse and neglect homicides. Children ages four and under accounted for 81% of the deaths. Sixty-two percent of the victims were black. Socioeconomic status was indicated to be low in 83% of the deaths.

Table 63
Number and Percent of Child Homicides Due to Child Abuse and Neglect Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	13	65.0	8	36.4
Under One Year	3	15.0	1	4.5
1 to 4 Years	9	45.0	6	27.3
5 to 9 Years	0	0.0	1	4.5
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	1	5.0	0	0.0
Female	7	35.0	14	63.6
Under One Year	4	20.0	5	22.7
1 to 4 Years	2	10.0	4	18.2
5 to 9 Years	0	0.0	1	4.5
10 to 14 Years	0	0.0	2	9.1
15 to 18 Years	1	5.0	2	9.1
Total	**20**	**100.0**	**22**	**100.0**

Table 64
Number and Percent of Child Homicides Due to Child Abuse and Neglect Reviewed by Race and Sex

Race and Sex	2002		2003	
	Number	Percent	Number	Percent
White	8	40.0	7	31.8
Male	6	30.0	1	4.5
Female	2	10.0	6	27.3
Black	12	60.0	14	63.6
Male	7	35.0	6	27.3
Female	5	25.0	8	63.4
Other	0	0.0	1	4.5
Male	0	0.0	1	4.5
Female	0	0.0	0	0.0
Total	**20**	**100.0**	**22**	**100.0**

Table 65
Number and Percent of Child Homicides Due to Child Abuse and Neglect Reviewed by Person Who Inflicted the Injury

Relationship	2002		2003	
	Number	Percent	Number	Percent
Parent(s)	9	45.0	10	45.5
Step Parent(s)	2	10.0	2	9.1
Foster Parent(s)	2	10.0	3	13.6
Parent's Partner	6	30.0	2	9.1
Sibling	0	0.0	1	4.5
Friend	1	5.0	0	0.0
Unknown	0	0.0	4	18.2
Total	**20**	**100.0**	**22**	**100.0**

Of the 19 children who were killed by their parents, eleven were killed by their mother and eight were killed by their father.

Table 66
Number and Percent of Child Homicides Due to Child Abuse and Neglect Reviewed by Event Trigger

Trigger	2002		2003	
	Number	Percent	Number	Percent
Crying	5	25.0	5	22.7
Toilet Training	3	15.0	1	4.5
Disobedience	0	0.0	2	9.1
Family Violence	2	10.0	0	0.0
Trying to Hide Pregnancy/Birth	2	10.0	0	0.0
Other	5	25.0	6	27.3
Unknown	3	15.0	8	36.4
Total	**20**	**100.0**	**22**	**100.0**

Crying continued to be the primary suspected trigger prompting the abusive event (10 cases). The suspected trigger was unknown or listed as "other" in 22 of the cases.

CPS had been previously involved* with the child who died in 55% of the deaths. A case was substantiated for abuse after the death in 79% of the deaths. Charges were filed in 37 of the 42 cases.

There was evidence of prior injuries in 36% of the cases. The child or family was documented as being high-risk for child abuse and neglect about 38% of the time.

Teams believed that the child abuse and neglect deaths reviewed were either probably or definitely preventable 96% of the time.

* The report form asks only whether there were prior referrals or substantiations; currently, data is not collected on the type or level of involvement, or whether the case was still open at the time of death.

Local Initiatives to Prevent Child Deaths

Local teams proposed 27 child abuse prevention activities, and 10 were initiated by the teams. Seventeen of the proposed initiatives addressed changes in agency practices or education via the media.

Calhoun - Suggested that a Shaken Baby Syndrome video be made mandatory viewing following the birth of a child and before discharge from the hospital.

Charlevoix, Oakland and Ottawa - Emphasized the need to continually educate mandated reporters about submitting 3200s (CPS referrals) and never assuming that another mandated reporter is filing the report.

Genesee - Expressed concern over training and investigation practices of DHS workers, indicating that DHS should review and improve these areas.

Kalamazoo - Local legislators were so upset by the abuse death of a child that they vowed to introduce legislation to address the issue of child abuse. In addition, the team met with local housing inspectors to assist in developing and improving community response to "bad" situations. Other proposals were to tie vouchered rent to regular inspections, to better educate people on the importance of working smoke detectors, and seek increased focus by the Office of the Children's Ombudsman.

Wayne - School-related educational initiatives included educating teachers and students about using the toll-free Crisis Hotline; the availability of Safe Havens for children who feel unsafe at home; and dealing with violence and breaking the cycle. Other activities indicated by Wayne included closer agency attention to known mental health issues, and better regulation of foster care-related placements. In addition, messages about bathtub water safety and domestic violence received media attention.

Recommendations for Policymakers

1. The Michigan Department of Human Services, Michigan Department of Community Health and Michigan Department of Education: Ensure that human service professionals working with high-risk families are knowledgeable about support programs and resources for new families, especially Maternal Support Services, Infant Support Services and other state and community-based primary and secondary prevention programs.

2. The Michigan Department of Human Services, Michigan Department of Community Health and Michigan Department of Education, in partnership with other disciplines: Develop (and Michigan Legislature: allocate funds for) home visitation programs using best practices, with home nursing as a component, targeting low-income, at-risk children/families.

3. The Michigan Department of Human Services and the Children's Trust Fund: Continue the Shaken Baby Syndrome Prevention campaign.

4. The Michigan Health and Hospital Association: Implement, statewide, the Children's Trust Fund Shaken Baby Syndrome prevention information/programs.

5. The Children's Cabinet: Commission research identifying the risk and protective factors for fatal child maltreatment.

Recommendations for Parents and Caregivers

- Make sure that your choice of a caretaker or babysitter is a patient person, who is experienced in caring for children, has positive feelings for your child and is not prone to violent behavior, drug abuse or alcoholism.
- If you are feeling overwhelmed or frustrated by your child, call someone you trust and find a way to calm yourself. Never strike, shake or throw your child.

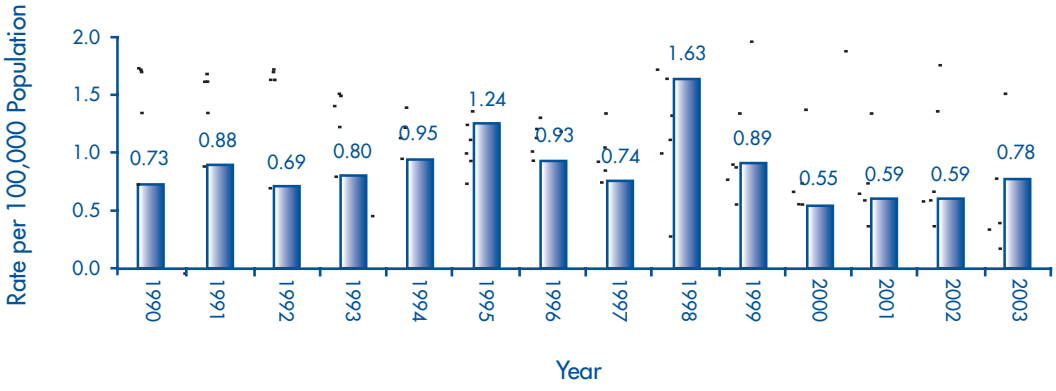
Homicide – Other Causes

Background

This section includes all other homicides reviewed by teams that were not the result of firearms or child abuse and neglect, as described in the previous sections. This includes deaths that resulted from poisoning, motor vehicle crashes, drowning, suffocation and strangulation and fire and burn. Interestingly, MDHS and the CRP (mentioned in the Special Issues section) deemed several of these "other homicides" to be abuse and neglect -related. The CDR teams, however, opined that the fatal event, although a homicide, was not abuse and neglect either because a perpetrator could not be identified or the fatal event was a one-time-only occurrence attributed to a psychotic episode.

Michigan Mortality Data from Death Certificates

Figure 46
Michigan Child Homicide Rates Due to Other Causes, Ages 0-18, 1990-2003

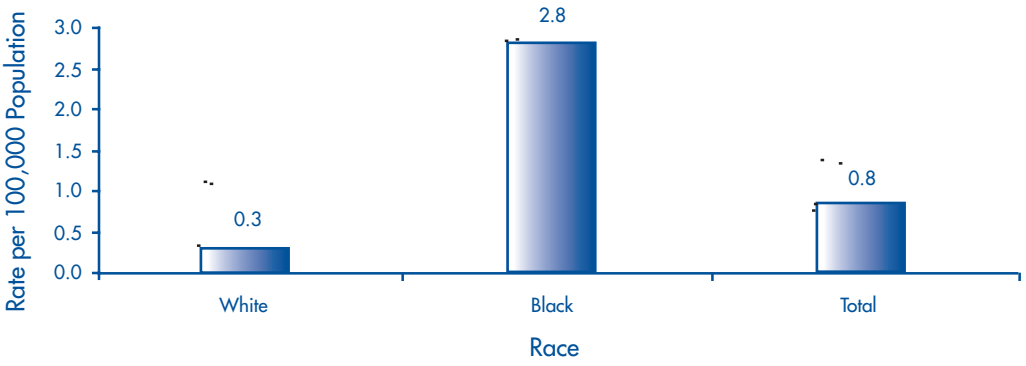


Note: The rate of 0.59 in 2002 represents 16 deaths; the 0.78 in 2003 represents 21 deaths.

Table 67
Number and Percent of Michigan Child Homicides Due to Other Causes by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	7	43.8	10	47.6
Under One Year	1	6.3	2	9.5
1 to 4 Years	3	18.8	6	28.6
5 to 9 Years	0	0.0	0	0.0
10 to 14 Years	0	0.0	1	4.8
15 to 18 Years	3	18.8	1	4.8
Female	9	56.3	11	52.4
Under One Year	4	25.0	2	9.5
1 to 4 Years	1	6.3	2	9.5
5 to 9 Years	0	0.0	2	9.5
10 to 14 Years	2	12.5	2	9.5
15 to 18 Years	2	12.5	3	14.3
Total	**16**	**100.0**	**21**	**100.0**

Figure 47
Michigan Child Homicide Rates Due to Other Causes by Race, Ages 0-18, 2003



Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed the homicides of 17 children in 2002 and 2003 that were due to causes other than firearms or child abuse and neglect. Over half (53%) of these deaths were to children under the age of five.

Table 68
Number and Percent of Homicides Reviewed Due to Other Causes by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	4	44.4	2	25.0
Under One Year	1	11.1	1	12.5
1 to 4 Years	1	11.1	1	12.5
5 to 9 Years	0	0.0	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	1	11.1	0	0.0
19 Years and Older	1	11.1	0	0.0
Female	5	56.6	6	75.0
Under One Year	2	22.2	2	25.0
1 to 4 Years	0	0.0	1	12.5
5 to 9 Years	0	0.0	0	0.0
10 to 14 Years	1	11.1	1	12.5
15 to 18 Years	2	22.2	2	25.0
19 Years and Older	0	0.0	0	0.0
Total	**9**	**100.0**	**8**	**100.0**

CPS had been previously involved in four of the 17 cases, and of those, three had been with the child who died.

Table 69
Number and Percent of Child Homicides Reviewed by Other Causes

Cause	2002		2003	
	Number	Percent	Number	Percent
Motor Vehicle	3	33.3	0	0.0
Fire and Burn	1	11.1	0	0.0
Drowning	0	0.0	3	37.5
Poisoning	1	11.1	2	25.0
Suffocation or Strangulation	2	22.2	3	37.5
Other	1	11.1	0	0.0
Undetermined	1	11.1	0	0.1
Total	**9**	**100.0**	**8**	**100.0**

Of the three homicides that were due to motor vehicle crashes: an infant was killed when a car fleeing the police T-boned the car in which she was an improperly restrained passenger; a 17-year-old was a properly restrained passenger in a vehicle that crashed while being chased by two men after a drug-deal went sour; and a 19-year-old was the driver of a car that careened into a pole while drag racing with another car. His passenger lived; the driver of the other car was charged with manslaughter.

The one child that died as a result of fire and burn was a teenager who was killed in a drug-related incident, when a known narcotics address was firebombed by a "Molotov Cocktail;" a total of three people died in this event.

Three homicide drownings were reviewed. In one case, a mentally disabled youth confessed to drowning his younger sister. The other two drownings occurred when a mother drowned her two young daughters and then shot herself. The CDR team reviewing this later case did not find this to be attributable to child abuse, as this mother had been, prior to this fatal event, a competent and nurturing parent. The sense was that she experienced a one-time psychotic event.

Three homicide poisonings were reported. In one, a three-month-old died from a lethal ingestion of alcohol and cocaine. Initially, the ME ruled this an accidental asphyxiation resulting from co-sleeping. The death certificate was amended to homicide after the toxicology report came in. In the second case, two adults and a one-year-old were found dead in their apartment. Little information was known about the exact cause of death at the time the report was turned in, although there was evidence of methadone in the child's system. In the final case, an infant and her family were visiting from another state when the child died while co-sleeping between her parents. Although initially labeled a positional asphyxia, the manner was changed to homicide when methamphetamine was found in the child's blood.

Five of the "Homicide – Other Cause" deaths were classified as Suffocation and Strangulation. A father was bathing his two children, an infant and a toddler. The father claimed to have "turned away for just a minute," finding the infant face down in the water. When the autopsy revealed strangulation as the cause of death, the father indicated that he had inadvertently squeezed the child's neck too hard during the CPR process. A teenaged girl was found deceased on the bedroom floor of her apartment, a result of manual strangulation from an unknown perpetrator. Another teenaged girl was strangled by her cousin. Still another teen was found strangled in a vacant house after being thrown out of her home by her mother due to suspicions that she might be pregnant. The final case involved the smothering of a toddler by his mentally disabled mother with a pillow.

The two remaining "Homicide - Other Cause" cases involved an infant and a pre-teen. The infant died from a closed head injury after her pregnant mother jumped from a 4th story window to escape an arson attack. The mother died in the fall and the baby, delivered via C-section, died days later. In the final case, a pre-teenaged girl was reported missing after she did not return from a walk; her body was found in a ditch a couple of weeks later, but according to the death certificate, a cause of death could not be determined. The manner of death, however, was ruled a homicide.

The teams determined that the deaths were either probably or definitely preventable in 63% of these cases.

Local Initiatives to Prevent Child Deaths

Local teams identified two prevention initiatives related to other types of child homicides, proposing school and media education about the non-violent resolution of disputes in relationships and safe driving, specifically addressing the use of drugs and alcohol.

Child Deaths
IN MICHIGAN
section seven

SUICIDES

Overview of Child Suicides, Ages 0-18

Background

Suicide is the third leading cause of death for young people in the U.S. ages 10-19, behind unintentional injury (mostly motor vehicle crashes) and firearm homicide. However, rates remain unacceptably high. In 2001, more young people in the U.S. died of suicide than cancer, heart disease, AIDS, birth defects, stroke, pneumonia, influenza and chronic lung disease combined.

Currently, the risk for youth suicide is highest among young white males. Yet from 1997 through 2001, suicide rates in the U.S. increased the most among young Hispanic males. Adolescent males of all races are four times more likely to commit suicide than females. From 1992-2001, males committed 84% of suicides for individuals aged 15-19. However, adolescent females are nearly twice as likely as males to *attempt* suicide. In a survey of Michigan high school students, eight percent of boys vs 13% of girls had made one or more suicide attempts during the past 12 months.

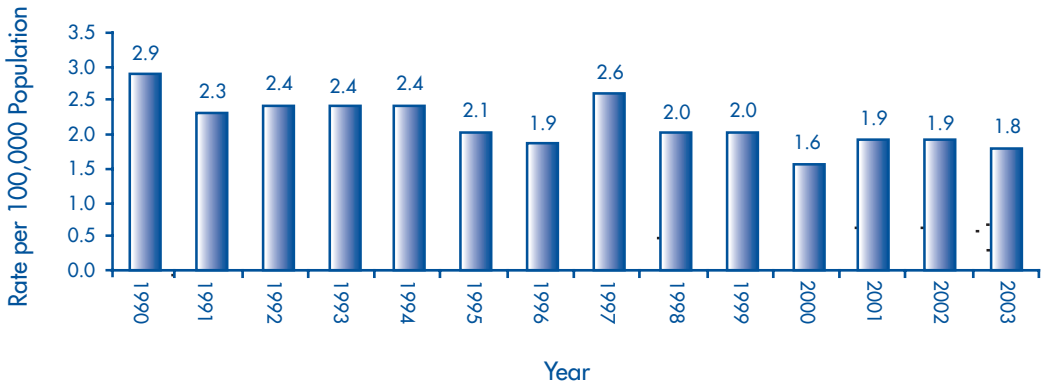
The CDC attributes the slight decrease in overall suicides in the U.S. from 1992-2001 mainly to the restriction of access to lethal means. However, the use of suffocation as a means of suicide for persons ages 10-19 has increased over the last decade.

New research being conducted in the U.S. examines the protective factors that can prevent teen suicide. A strong, positive connection to parents, family and/or school may provide some immunity for teens when they are troubled and may help prevent suicides.

Major Risk Factors

- Previous suicide attempt
- Mood disorders and mental illness
- Substance abuse
- Childhood maltreatment
- Parental separation or divorce
- Inappropriate access to firearms
- Interpersonal conflicts or losses without social support
- Previous suicide by a relative or close friend
- Other significant struggles such as bullying or issues of sexuality

Figure 48
Michigan Child Suicide Rates, Ages 0-18, 1990-2003



Note: The rate of 1.9 in 2002 represents 50 deaths; the 1.8 in 2003 represents 47 deaths.

Table 70
Number and Percent of Michigan Child Suicides by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	41	82.0	39	83.0
10 to 14 Years	9	18.0	8	17.0
15 to 18 Years	32	64.0	31	66.0
Female	9	16.0	8	17.0
10 to 14 Years	3	6.0	3	6.4
15 to 18 Years	6	12.0	5	10.6
Total	**50**	**100.0**	**47**	**100.0**

Figure 49
Michigan Child Suicide Rates by Race, Ages 0-18, 2003

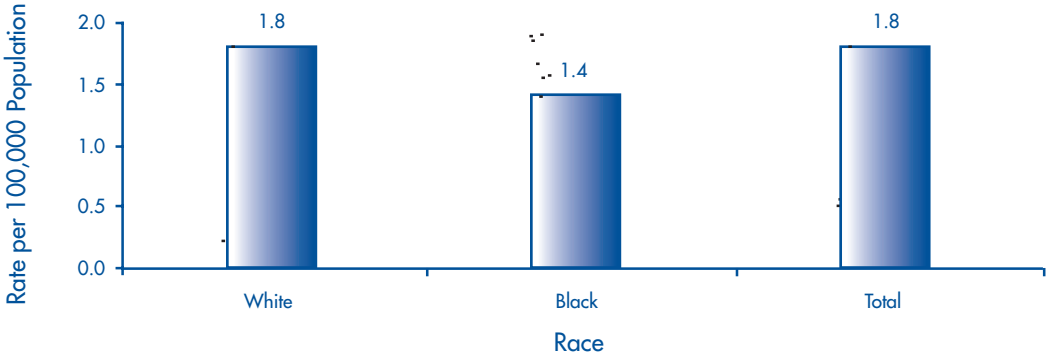
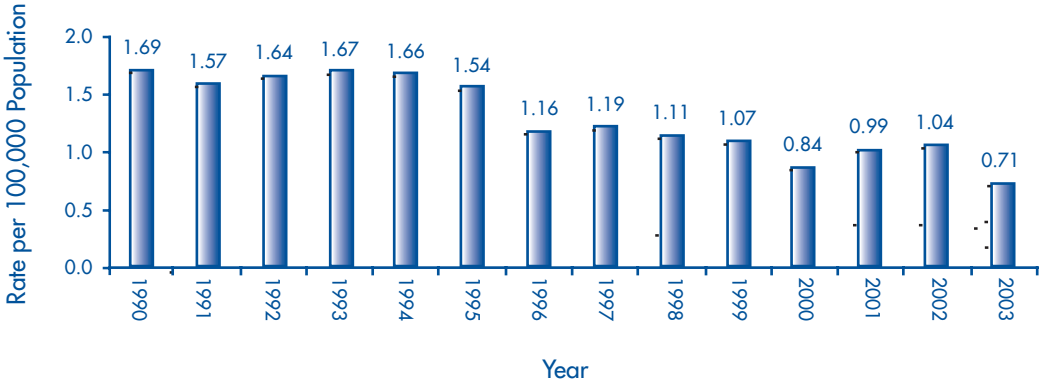
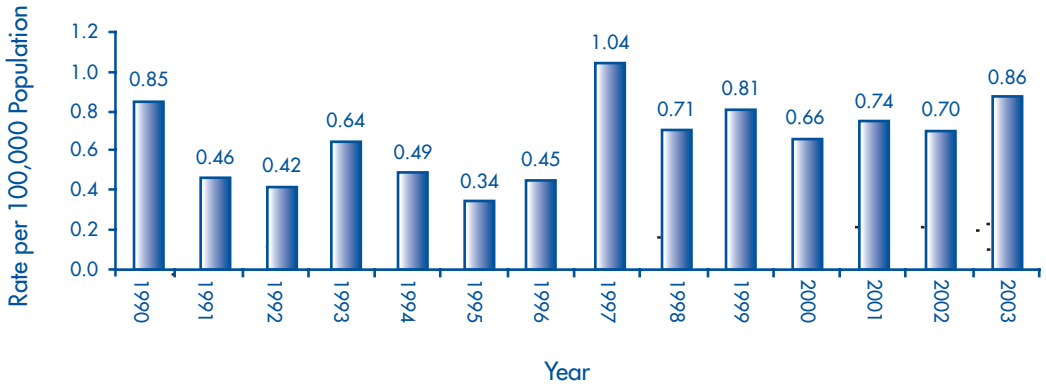


Figure 50
Michigan Child Suicide Rates Due to Firearms and Weapons, Ages 0-18, 1990-2003



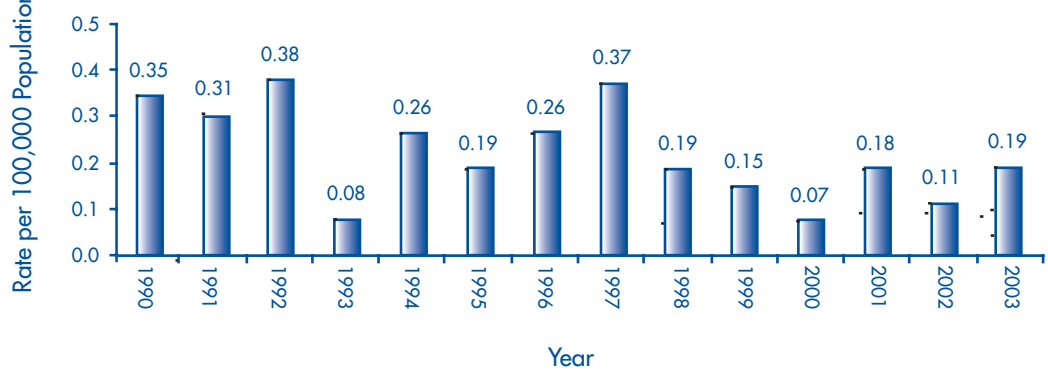
Note: The rate of 1.04 in 2002 represents 28 deaths; the 0.71 in 2003 represents 19 deaths.

Figure 51
Michigan Child Suicide Rates Due to Suffocation or Strangulation, Ages 0-18, 1990-2003



Note: The rate of 0.70 in 2002 represents 19 deaths; the 0.86 in 2003 represents 23 deaths.

Figure 52
Michigan Child Suicide Rates Due to Other Causes, Ages 0-18, 1990-2003



Note: The rate of 0.11 in 2002 represents 3 deaths; the 0.19 in 2003 represents 5 deaths.

Of the eight suicides from other causes that occurred in 2002 and 2003, five were male and three were female; all eight were white; and one was between 10 and 14 years, and seven were between 15 and 18 years.

Child Death Review Team Findings from CDR Case Reports

Local teams conducted 85 reviews of suicides in 2002 and 2003. However, two separate teams reviewed one of the deaths that occurred during this time - one in the county of residence and the other in the county of incident. Because the findings of these teams differed slightly, this death will be reported separately.

Table 71
Number and Percent of Child Suicides Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	33	84.6	35	76.1
10 to 14 Years	7	17.9	7	15.2
15 to 18 Years	26	66.7	27	58.7
19 Years and Older	0	0.0	1	2.2
Female	6	15.4	11	23.9
10 to 14 Years	1	2.6	3	6.5
15 to 18 Years	5	12.8	8	17.4
19 Years and Older	0	0.0	0	0.0
Total	**39**	**100.0**	**46**	**100.0**

Table 72
Number and Percent of Child Suicides Reviewed by Race and Sex

Race and Sex	2002		2003	
	Number	Percent	Number	Percent
White	33	84.6	36	78.3
Male	28	71.8	28	60.9
Female	5	12.8	8	17.4
Black	1	2.6	6	13.0
Male	1	2.6	4	8.7
Female	0	0.0	2	4.3
Other	5	12.8	4	8.7
Male	4	10.3	3	6.5
Female	1	2.6	1	2.2
Total	**39**	**100.0**	**46**	**100.0**

Teams considered most youths completing suicide (51%) to be of middle socio-economic status (SES). Of the remaining suicide completers, 26% were of low SES, and in 20% of the cases, SES was unknown.

Table 73
Number and Percent of Child Suicides Reviewed by Cause of Death

Cause	2002		2003	
	Number	Percent	Number	Percent
Firearm and Weapon	22	56.4	22	47.8
Suffocation or Strangulation	14	35.9	22	47.8
Poisoning	0	0.0	1	2.2
Fall	0	0.0	1	2.2
Motor Vehicle	3	7.7	0	0.0
Total	**39**	**100.0**	**46**	**100.0**

Table 74
Number and Percent of Child Suicides Reviewed by History of Violence*

History of Violence	2002		2003	
	Number	Percent	Number	Percent
Violence in child's home	6	15.4	4	8.7
Violence toward self and others	8	20.5	9	19.6
Violence perpetrated in child's presence	3	7.7	2	4.3
Victim of bullying or violence at school	2	5.1	3	6.5

*Note: The decedent could have had a history of more than one of the above circumstances.

Thirty-three of the 85 youths whose suicides were reviewed had a history of involvement with CPS. Of those, 20 were named as the victim in the abuse or neglect allegations that were reported.

A total of 15 youths (18%) had illegal drugs, alcohol or both in their systems at the time that they committed suicide.

Table 75
Number and Percent of Child Suicides Reviewed by Circumstances

Circumstance	2002		2003	
	Number	Percent	Number	Percent
Followed a Precipitating Event	21	53.8	32	69.6
Made Prior Verbal Threats	11	28.2	19	41.3
Was Completely Unexpected	19	48.7	13	28.3
Known Mental Health Problems	9	23.1	12	26.1
Receiving Mental Health Treatment	8	20.5	10	21.7
Made Prior Attempts	2	5.1	9	19.6
Part of a Cluster Suicide	0	0.0	3	6.5

Table 76
Number and Percent of Child Suicides Reviewed by Precipitating Event

Precipitating Event	2002		2003	
	Number	Percent	Number	Percent
Recent family problems	15	38.5	18	39.1
Problems at school	11	28.2	15	32.6
Problem with girlfriend/boyfriend	7	17.9	8	17.4
Criminal legal problem	7	17.9	8	17.4
Death of friend or family member	2	5.1	6	13.0

Often, a precipitating event can be identified as a factor that contributed to the suicide. Other suicides occur with no indication as to why they happened. As they reviewed the deaths, teams found that 38% of the suicides appeared to be completely unexpected.

Firearm Suicides

CDR teams reviewed the firearm suicides of 44 youths in 2002 and 2003.

Table 77
Number and Percent of Child Suicides Due to Firearms Reviewed by Type of Weapon

Weapon	2002		2003	
	Number	Percent	Number	Percent
Shotgun	7	31.8	10	45.5
Handgun	11	50.0	6	27.3
Rifle	3	13.6	5	22.7
Unknown Firearm	1	4.5	1	4.5
Total	**22**	**100.0**	**22**	**100.0**

Four of the firearms used in these suicides had been stored in a locked cabinet. Two firearms used had a trigger lock in place at the time. In 11 cases reviewed, the teens were old enough (18) to legally purchase a firearm themselves, thereby making the limiting of access to firearms more difficult. Four of the 44 youths had regular access to firearms.

Suffocation and Strangulation Suicides

Teams reviewed the deaths of 14 youths who completed suicide by suffocation (hanging) in 2002 and 2003.

Table 78
Number and Percent of Child Suicides Due to Hanging Reviewed by Type of Object

Type of Object	2002		2003	
	Number	Percent	Number	Percent
Rope or String	6	42.9	13	59.1
Dog Leash or Chain	4	21.4	1	4.5
Belt or Tie	3	21.4	3	13.6
Other Clothes	0	0.0	2	9.1
Electrical Cord	1	7.1	2	9.1
Unknown	0	0.0	1	4.5
Total	**14**	**100.0**	**22**	**100.0**

Of the 85 suicides reviewed by all means, local teams decided that most (59%) were either probably or definitely preventable. Often, when teams indicate that a suicide was not preventable, they felt that it was either completely unexpected and therefore impossible to prevent, or that the teen was so determined to complete the act of suicide that even multiple interventions could not have prevented the death.

Local Initiatives to Prevent Child Deaths

Local teams proposed 19 suicide prevention initiatives and implemented 14 of those. They included:

Clinton - The Health Department wrote a press release on gun safety. Improved communication gaps regarding agencies and CPS in cases of suicide and other circumstances where siblings may be at risk.

Chippewa, Livingston, Wayne - Implementation of the Yellow Ribbon Suicide Prevention program in area public schools.

Gogebic - Ran billboards and radio spots about depression, started a suicide support group, conducted depression screenings at local high schools and formed a suicide prevention task force to address awareness of depression issues and treatments.

Gratiot - Recommended the creation of a counselor position in the court to assess all minor cases for alcohol and suicide risk. They planned to initiate the Massachusetts Youth Screening Instrument (MAYSI) through the court system.

Iosco - Suicide prevention activities were taken to area schools. These include school assemblies, support groups and parent meetings.

Menominee – Initiated a suicide response team and "Helping Healer" program.

Montcalm - The Intermediate School District sent six psychologists and all county school social workers to a 2-part teen suicide prevention workshop.

Lapeer - Proposed the development of legislation to impose a penalty for selling ammunition to anyone who is underage.

Shiawassee - A news article on suicide awareness was written.

Tuscola - Sent a letter to all the schools listing suicide prevention hotline numbers.

Van Buren - Money was requested from the Child Abuse and Neglect Council to bring a 12-week after school program on coping skills to area schools; conducted a suicide prevention and school bullying workshop and held a suicide prevention conference.

Recommendations for Policymakers

1. The Michigan Department of Community Health: Take the lead in collaborating with the Michigan Department of Education and Michigan Department of Human Services to support the development and implementation of a state suicide prevention plan.

2. The Office of the Governor: Support the State Mental Health Commission in addressing the access to services for youths at risk for suicide.

3. The Michigan Department of Community Health: Lead a collaboration between community mental health, the Michigan Health and Hospital Association and the Michigan Department of Education, to ensure that bereavement services are available to all children who have experienced the recent death of a family member or close friend.

4. The Michigan Department of Community Health: Ensure that parents, teachers and professionals in the fields of public and mental health, substance abuse and juvenile justice have an awareness of the risk factors of youth suicide and how to access intervention services by providing educational training and materials.

Recommendations for Parents and Caregivers

- If you notice a change in your child's behavior or habits, talk to them about it immediately and do not be afraid to seek professional help.
- If your child seems depressed, highly anxious or has made suicide threats, seek help from a professional and make sure your child cannot gain access to weapons or other means of suicide in your home.
- Take all suicide threats seriously.

Child Deaths
IN MICHIGAN
section eight

Undetermined DEATHS

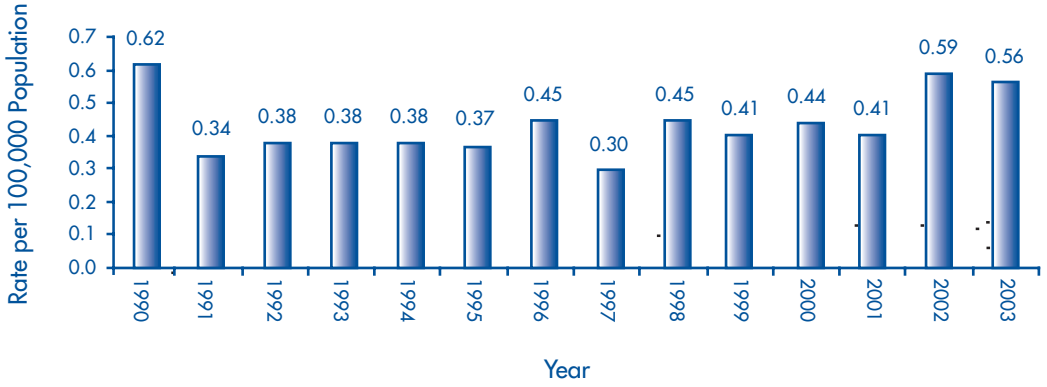
Overview of Undetermined Child Deaths, Ages 0-18

Background

"Undetermined" is assigned as the manner of death when the medical examiner believes that there is insufficient evidence or information, especially about intent, to assign the manner as Natural, Accident, Homicide or Suicide.

Michigan Mortality Data from Death Certificates

Figure 53
Michigan Child Death Rates Due to Undetermined Manner, Ages 0-18, 1990-2003



Note: The rate of 0.59 in 2002 represents 16 deaths; the 0.56 in 2003 represents 15 deaths.

Table 79
Number and Percent of Michigan Undetermined Child Deaths by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	10	62.5	10	66.7
Under One Year	3	18.8	2	13.3
1 to 4 Years	1	6.3	1	6.7
5 to 9 Years	1	6.3	0	0.0
10 to 14 Years	1	6.3	4	26.7
15 to 18 Years	4	25.0	3	20.0
Female	6	37.5	5	33.3
Under One Year	1	6.3	2	13.3
1 to 4 Years	1	6.3	0	0.0
5 to 9 Years	4	25.0	0	0.0
10 to 14 Years	0	0.0	0	0.0
15 to 18 Years	0	0.0	3	20.0
Total	**16**	**100.0**	**15**	**100.0**

Child Death Review Team Findings from CDR Case Reports

In 2002 and 2003, death certificates recorded that 31 Michigan children died of undetermined manner. CDR teams reported reviewing 106 child deaths of undetermined manner in those two years. The main reasons for the discrepancy in numbers are: (1) manner of death is unavailable from Vital Records, so SIDS and other unexpected infant mortality are considered "Natural" manner under the cause of death coding rules of the National Center for Health Statistics regardless of whether the local medical examiner called the manner "Undetermined;" and (2) death certificates may include additional information from the certifying physician or have been amended since the time that CDR teams conducted the review.

Table 80
Number and Percent of Undetermined Child Deaths Reviewed by Sex and Age

Sex and Age Group	2002		2003	
	Number	Percent	Number	Percent
Male	38	70.4	28	53.8
Under One Year	21	38.9	18	34.6
1 to 4 Years	4	7.4	3	5.8
5 to 9 Years	1	1.9	0	0.0
10 to 14 Years	4	7.4	2	3.8
15 to 18 Years	8	14.8	5	9.6
Female	16	29.6	24	46.2
Under One Year	13	24.1	19	36.5
1 to 4 Years	2	3.7	1	1.9
5 to 9 Years	1	1.9	1	1.9
10 to 14 Years	0	0.0	1	1.9
15 to 18 Years	0	0.0	2	3.8
Total	**54**	**100.0**	**52**	**100.0**

Table 81
Number and Percent of Undetermined Child Deaths Reviewed by Cause

Cause	2002		2003	
	Number	Percent	Number	Percent
Unsafe Infant Sleep Environment	27	50.0	26	50.0
Substance Use / Overdose	8	14.8	4	7.7
Child Abuse and Neglect	6	11.1	4	7.7
Self-Inflicted	3	5.6	6	11.5
Other	7	13.0	10	19.2
Unknown	3	5.6	2	3.8
Total	**54**	**100.0**	**52**	**100.0**

For the deaths that were known to be self-inflicted, the manner was ruled undetermined because the intent of the individuals were unknown.

Sleep Related

Most of the 53 deaths in this category were related to unsafe sleeping environments:

- 26 infants (49%) died while sleeping in a bed with adults and/or other children. In nine of those cases, it was known that someone rolled onto the infant.
- 14 infants (26%) were found with bedding covering their heads, or near their mouth and nose.
- 4 infants (8%) were placed to sleep alone on a surface not designed for infants, such as an adult bed, couch or changing table. In one case, a crib had been modified by removing one of the sides.
- 3 infants (6%) were placed to sleep on their backs on a pillow or other soft bedding, and subsequently rolled over and were found face-down in the pillow/bedding.
- 2 infants (4%) were placed to sleep on their stomachs on top of a pillow or other soft bedding.

Overdose

Of the 12 deaths in this category, there were often multiple substances found in the toxicology screen:

- 5 involved cocaine
- 4 involved heroin or methadone
- 1 involved marijuana
- 2 involved benzodiazepines
- 4 involved other prescription medications
- 1 involved over-the-counter medications
- 2 involved "huffing"

Most of the substance-related deaths (92%) were to teenagers. In these cases, it was unknown whether the overdose was accidental or suicidal; however, in one case, the manner was assigned as undetermined because it is unknown if the death was accidental or a homicide.

Possible Abuse or Neglect

In 10 cases, the CDR teams felt that there may have been abuse or neglect involved, even though the manner of death was ruled to be undetermined. Three cases involved a head injury, one case involved multiple injuries, four cases involved medical neglect and two cases had conflicting stories. In one case, charges were filed against the mother.

Self-inflicted

There were nine cases reviewed in which it was known that the fatal injuries were self-inflicted, but the decedents' intent was indeterminate. It was noted that the child had received mental health services in two of these cases. Three of these children had made prior attempts. Two cases involved firearms.

Others

The remaining 22 undetermined deaths included: a fire, a fall, a drowning, the discharge of an improperly stored firearm, a carbon monoxide poisoning, an overheating, two that suffered from complications of intrauterine drug exposure, a birth trauma, an in-utero domestic violence event, several involving medical problems and several where the details were unclear.

Overall, CDR teams believed that 70% of undetermined deaths reviewed were either probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Teams proposed 72 prevention activities related to deaths of undetermined manner, initiating 41 of those, including:

Allegan – Initiated the "Know the Risks" campaign to educate the community about the risks of sleeping with infants.

Genesee – Promoted their Safe Sleep campaign in the media.

Kalamazoo – Promoted their "Kalamazoo Infant Safe Sleep" campaign in the media.

Livingston – Printed an article on water safety in the 4C Newsletter, and proposed sending similar information to other agencies that have summer activities for children such as summer camps, the Girl Scouts and others.

Montcalm – Reviewed the importance of Safe Sleep messages at Public Health staff meetings.

Wayne – Changes were made in agency practice to create additional back-up requirements for foster parents. Infant safe sleep environment education was presented in the media. And, several agencies came together to hold community forums on safe sleep.

Recommendation for Policymakers

1. The prosecuting attorney, law enforcement agencies, medical examiner and the Department of Human Services in every county: Upon the promulgation of rules by the Michigan Department of Community Health per Public Act 179 of 2004, jointly adopt and implement the child death scene investigation protocols.

Child Deaths IN MICHIGAN section nine

Michigan FIMR Network

Fetal and Infant Mortality REVIEW

The Fetal and Infant Mortality Review (FIMR) Process

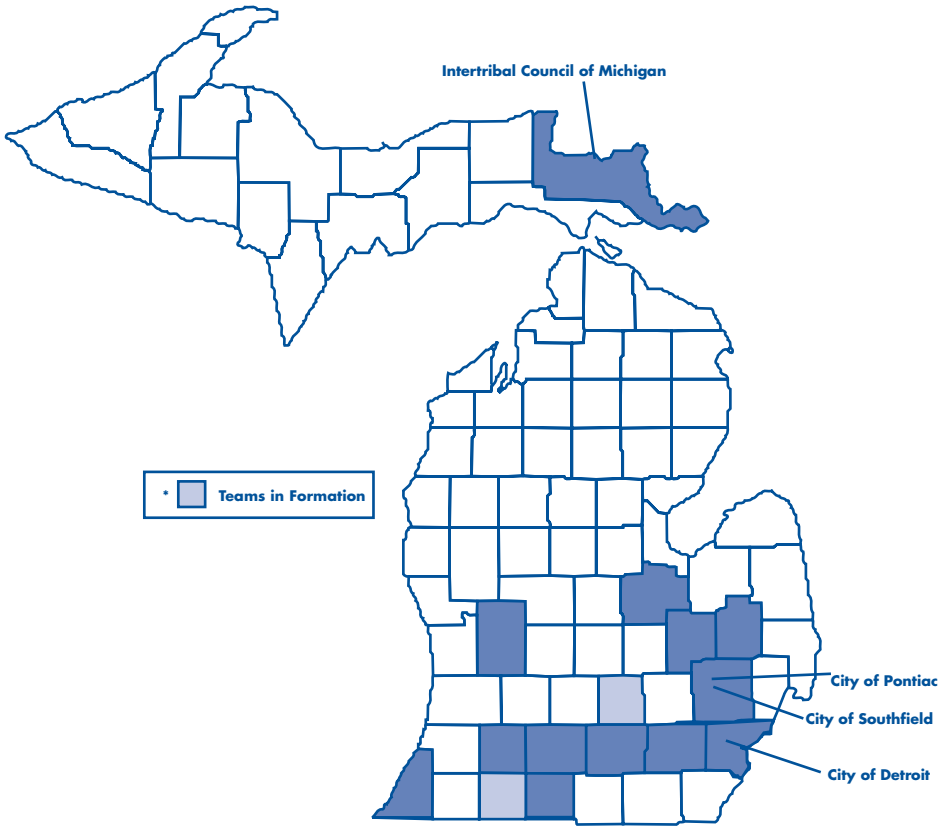
Program History

Michigan's Fetal and Infant Mortality Review (FIMR) program began in 1991, when the communities of Saginaw and Battle Creek were both awarded three-year grants to develop and institutionalize a local community process for Fetal and Infant Mortality Review. The American College of Obstetrics and Gynecology (ACOG) sponsored the grants through National FIMR, whose goal is to help communities better understand the issues involved in infant deaths and to design programs and services, new linkages and surveillance systems to improve pregnancy outcomes and bring about a reduction in infant mortality. Battle Creek was unable to continue the process when funding from a federal grant ended. Saginaw, however, found other funding that allowed the FIMR to continue without interruption. This project is one of the oldest in the country, and continues to be a model for newly developing local teams in Michigan.

There are 14 FIMR teams in Michigan, and two teams in formation at the time of this writing (Figure 54). While every team faced unique challenges to become established, here are some highlights of Michigan's FIMR program history:

- In 1993, Detroit was awarded a Healthy Start grant to study infant deaths using the FIMR approach, in conjunction with Wayne State University. Detroit became a demonstration project for inner-city infant mortality reduction strategies.
- In 1997, Kalamazoo was awarded a Healthy Start grant that included a FIMR. Although FIMR is no longer included as a common performance measure for Healthy Start, Kalamazoo has recognized the importance of knowing the local determinants of infant mortality and has rolled FIMR into their local health plan supported by foundation and community funds.
- In 1997, the State of Michigan was awarded a three-year grant to coordinate and give technical support to new and existing FIMR programs in the state. Michigan Public Health Institute was contracted to provide support to the local teams. A state coordinator was hired, and between 1997-2001 four new projects began in Genesee, Kent and Branch Counties, as well as the City of Pontiac. The City of Detroit and Calhoun County were also funded with this grant.
- In 2003, a unique FIMR collaborative was started with the Intertribal Council of Michigan to review Native American infant deaths throughout the state.

Figure 54
Fetal and Infant Mortality Review Teams



The Michigan Department of Community Health (MDCH - Title V) continues to support the FIMR teams with technical assistance and statistical and epidemiological information. The value of review and surveillance has been recognized, and provides the background for establishing statewide support for local FIMR teams. The counties that have FIMR teams account for approximately 68% of infant mortality,[1] so there is already great potential to learn about infant mortality. The original FIMR projects have also demonstrated the interaction needed between FIMR and other Maternal and Child Health (MCH) programs designed to lower infant mortality.

Above all, the development of state support for local FIMR teams was designed to help improve birth outcomes in Michigan. Having experienced essentially no reduction in infant mortality since 1996, despite some continued reductions in other areas of the nation, Michigan is determined to improve this picture. The current Title V and five-year plan includes information gained from local FIMR findings and calls for continuation of this process. Communities with infant mortality rates above the state average and those communities with a significant racial or ethnic disparity in infant mortality are targeted to improve the identification of local issues affecting poor birth outcomes.

[1] From a comparison of total number of infants deaths for FIMR counties to total number of infant deaths for the state.

Conducting a FIMR Review

A Two-Tiered System

The Michigan FIMR projects follow the national model of a two-tiered process. The first tier is the Case Review Team (CRT), which is a local multidisciplinary group that comes together to examine confidential, de-identified cases of infant deaths. A summary of the case is presented to the CRT. The team identifies issues in individual cases, looks at trends over time, and makes recommendations for community change when appropriate.

The second tier is the Community Action Team (CAT), which is a diverse group of community leaders, advocates and consumers who take the recommendations for community change from the CRT and prioritize the issues. They are responsible for the design and implementation of interventions to improve service systems and resources for women, infants, children and families within the community.

The continuous nature of the FIMR process provides a built-in feedback mechanism that helps monitor whether or not policy recommendations and actions are implemented. Changes (or lack thereof) in the community service systems and resources for women, children and families will be evident in new case reviews. Additionally, mechanisms are utilized to enhance communication between the CRT and CAT about the progress of interventions.

Membership

Members of the CRTs are a mix of professionals and agency representatives that provide services or community resources for families in the project area. The CRT is the information processor of the FIMR program. Michigan's CRTs include experts in the following areas:

- *Public Health Providers*: WIC, Family Planning, Medicaid, Medical Examiners, Nursing, MSS/ISS providers, Outreach & Community Health workers
- *Human Service Providers*: DHS (Child Protective Services), Substance Abuse Services, Mental Health, Domestic Violence, Local Law Enforcement, Teen Services, Healthy Start
- *Health Care Providers*: Obstetricians, Pediatricians, Neonatologists, Nurse Midwives, Social Workers, Registered Dieticians, Family Practice and ED Physicians, Maternal Fetal Medicine Specialists, Geneticists, EMS
- *Consumers and Advocacy Groups*: March of Dimes, Michigan Healthy Mothers Healthy Babies coalition, Tomorrow's Child (formerly Michigan SIDS Alliance), Planned Parenthood
- *Community Leaders*: Educators, Clergy, City Council, County Commissioners

The CATs are made up of persons with the political will and fiscal resources to create large-scale systems change, and those who can bring a community perspective on how best to create the desired change. Members may sit on both CRTs and CATs. In addition to the types of members that sit on CRTs, CAT membership may also include:

- CEO (or other high-level position) of the local hospital
- Representatives from managed care organizations
- Representatives of the local or county medical society
- Government agencies such as housing authority, transportation authority, local commissioner of health
- Council for Abuse and Neglect
- Community business leaders, Chamber of Commerce representatives
- Minority rights groups

- Civic groups (Kiwanis, Junior League, United Way)
- Community Collaboratives

Membership is voluntary. In Michigan, hundreds of committed members take time from their jobs and families to help identify issues associated with infant mortality in their communities and take action to prevent future deaths.

Team Coordination

To insure the success of a local FIMR, a dedicated team coordinator takes responsibility for the management of the activities of the program. The coordinator may supervise FIMR staff members (including home interview staff), abstract vital statistics and medical records, develop case summaries, facilitate team meetings and serve as program liaison to other community agencies involved in the process. The team coordinator also develops written recommendations based on the review findings and ensures that they are regularly brought to the CAT for deliberation and prioritization.

Cases Selected for Review

FIMR teams usually review cases six to eight months after the death (it takes about 2-3 months of field work to have cases ready for review). Local teams determine the number and types of cases to be reviewed. Some communities review all of their infant deaths (infants born live who do not survive until their first birthday) in a calendar year. Teams with higher numbers of infant deaths use analysis of community priorities and other MCH models such as Perinatal Periods of Risk (PPOR) to guide their case selection process.

At the Review

Data are collected from a variety of sources prior to the meeting. These may include prenatal care history, maternal hospitalizations, labor and delivery records, infant hospital records (pre and post discharge), well baby and sick baby visits, infant emergency department and hospital readmissions, DHS history, police records, support services such as WIC, MSS and ISS. An interview with the family, particularly the mother, is also conducted.

A de-identified case summary is then prepared and presented to the team by the local coordinator/facilitator, and each case is examined for the significant social, economic, public health, educational, environmental and safety issues related to the death. Team members capture issues associated with and contributing to the death while asking the questions:

- Did the family receive the services or community resources they needed?
- Are there gaps in the systems?
- What does this case tell us about how families use the existing local resources?
- What are the barriers to care?
- What are the trends in service delivery?
- What can be done to improve policies that affect families?

After thorough discussion and review, recommendations are formulated and passed on to the CAT.

The State FIMR Network

The Michigan State FIMR Network began in 1997 when the State of Michigan was awarded a three-year grant to coordinate and give technical support to new and existing FIMR programs in the state. Network membership includes local FIMR team coordinators and staff as well as other child welfare experts. The Network meets monthly, and provides an opportunity for problem solving, resource sharing and program updates. The State FIMR Network exists to provide members with an opportunity for:

- Dialog and common understanding of issues related to infant mortality and the FIMR process
- Training topics and in-services on factors associated with maternal health and infant morbidity/mortality
- Create and maintain a base of support for FIMR personnel

A Note on the Data Used in This Report

There are two types of data presented in this report: Michigan Infant Mortality from Linked Birth-Death Certificates and FIMR Team Findings from Case Reports. The purpose for presenting infant death data in this manner is to provide an overview of all infant deaths using the Michigan Infant Mortality Data from Linked Birth-Death Certificates and then attempt to "drill-down" to more specific issues surrounding those deaths using the FIMR Team Findings from Case Reports.

Michigan Infant Mortality from Linked Birth-Death Certificates match the birth certificate and death certificate for all infants age 0 to 1, who died in the State of Michigan in a particular year. Death certificates are the official count of child deaths in Michigan, completed at the county level and submitted to the Division for Vital Records and Health Statistics, Office of the State Registrar at the Michigan Department of Community Health (MDCH). Mortality rates were calculated as the number of infant deaths ages 0 to 12 months per 1,000 live births. By matching the death certificate with the birth certificate, infant mortality statistics can be linked to birth statistics and maternal factors to provide a more complete picture of infant death.

FIMR Team Findings from Case Reports are the reports completed by local FIMR teams during the review of an infant's death, and compiled at the state FIMR office. Included in this data are infants whose death was reviewed by a local team in a particular year. Deaths are not always reviewed in the year of occurrence, especially when the death occurs late in the year. Therefore, FIMR Team Findings from Case Reports from 2002 will include deaths from previous years, and some 2002 deaths will be included in the 2003 review findings. The case reports compiled by the state office are a limited subset of the case information that is collected and discussed by local teams. Steps have been taken to expand the level of data collected at the state level in 2005.

Since the two types of data track different cohorts, the reader is cautioned not to make direct one-to-one comparisons between the Michigan Infant Mortality from Linked Birth-Death Certificates numbers and the FIMR Team Findings from Case Reports numbers.

Michigan Infant Mortality From Linked Birth-Death Certificates

Figure 55
Michigan Infant Deaths, Ages 0-1, 1990-2003

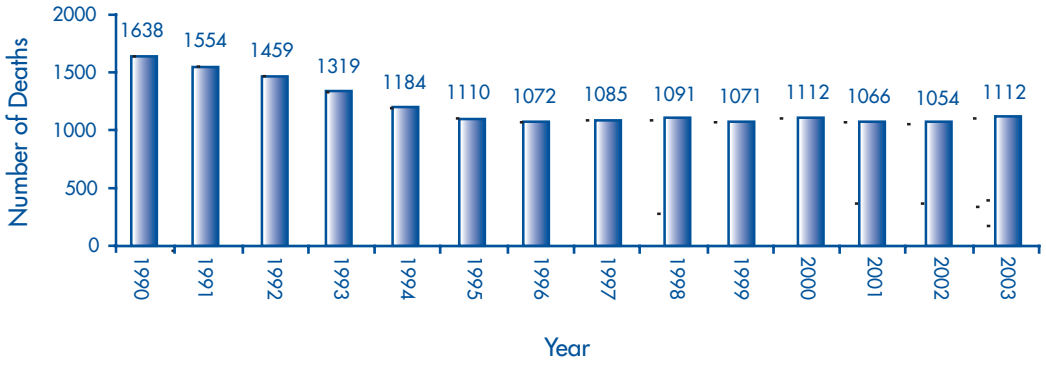
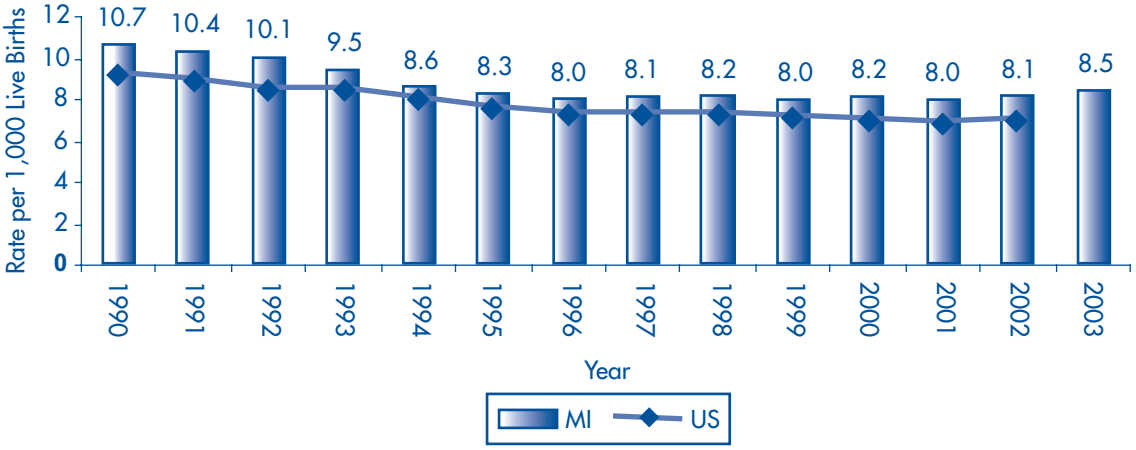


Figure 56
Michigan and United States Infant Death Rates, Ages 0-1, 1990-2003

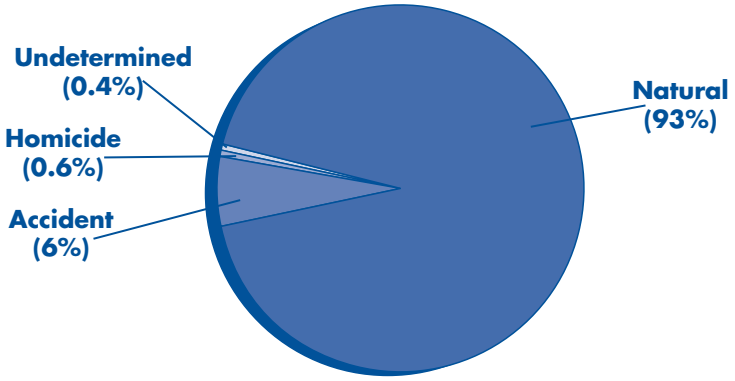


Michigan had 1,054 infant deaths in 2002 and 1,112 infant deaths in 2003. Infant mortality rates are calculated by the number of infants that died in a year per 1,000 live births; rather than per 100,000 population as it is for other age groups. While the birth rate increased one percent between 2002 and 2003, the infant death rate increased five percent. However, the infant death rate is still 21% less than it was in 1990.

Of the deaths to infants in 2003, 69% occurred during the neonatal period (within the first 28 days of life). The increase in the infant death rate in 2003 is due to an increase in deaths in the neonatal period. The postneonatal death rate (between 29 and 364 days of age) remained the same from 2002 to 2003.

While the decline in infant mortality since 1990 was similar for black infants (19%) and white infants (15%), substantial racial disparities remain. In 2003, black infants had a death rate 2.6 times that of white infants, which is a larger gap than the disparities that exist for all children aged 0-18 years.

Figure 57
Michigan Infant Deaths by Manner, Ages 0-1, 2003



Deaths in the neonatal period are almost entirely natural (98% Natural, 2% Accident). The postneonatal period has more deaths from non-natural manners, but is still predominately natural (79% Natural, 18% Accident, 2% Homicide, 1% Undetermined).

Figure 58
Percent Causes of Michigan Infant Deaths, Ages 0-1, 2003

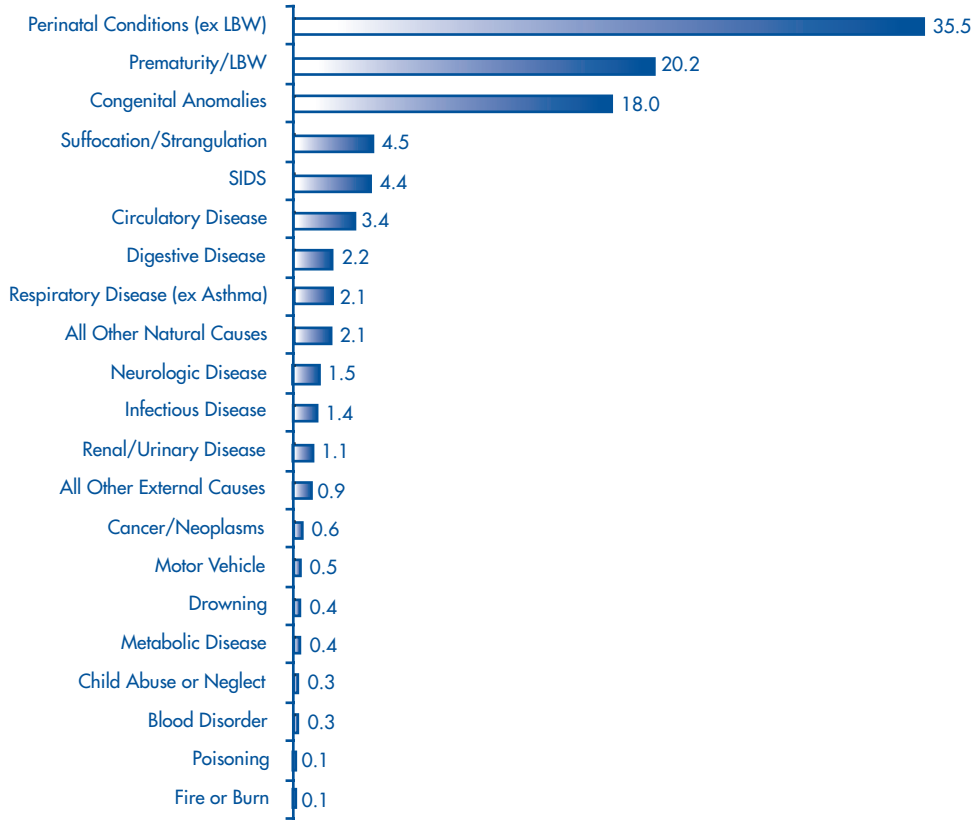


Table 82
Number and Percent of Michigan Infant Deaths by Age Group, 2002-2003

Age Group	2002		2003	
	Number	Percent	Number	Percent
Less than 24 Hours	470	44.6	486	43.7
Early Neonatal (1-6 Days)	100	9.5	136	12.2
Late Neonatal (7-27 Days)	149	14.1	149	13.4
Post Neonatal (28-364 Days)	335	31.8	341	30.7
Total	**1054**	**100.0**	**1112**	**100.0**

Table 83
Number and Percent of Michigan Infant Deaths by Birth Weight, 2002-2003

Birth Weight	2002		2003	
	Number	Percent	Number	Percent
Under 750 grams	507	48.1	526	47.3
750 grams to 1,499 grams	120	11.4	158	14.2
1,500 grams to 2,499 grams	116	11.0	144	12.9
2,500 grams and over	310	29.4	283	25.4
Unknown	1	0.1	1	0.1
Total	**1054**	**100.0**	**1112**	**100.0**

Table 84
Number and Percent of Michigan Infant Deaths by Estimated Gestational Age, 2002-2003

Gestational Age	2002		2003	
	Number	Percent	Number	Percent
Under 24 weeks	371	35.2	383	34.4
24 weeks to 31 weeks	247	23.4	300	27.0
32 weeks to 36 weeks	113	10.7	148	13.3
37 weeks and over	315	29.9	277	24.9
Unknown	8	0.8	4	0.4
Total	**1054**	**100.0**	**1112**	**100.0**

Table 85
Number and Percent of Michigan Infant Deaths by Race of Mother, 2002-2003

Maternal Race	2002		2003	
	Number	Percent	Number	Percent
White	632	60.0	698	62.8
Black	391	37.1	368	33.1
American Indian	2	0.2	4	0.4
Asian / Pacific Islander	16	1.5	29	2.5
Unknown	13	1.2	13	1.2
Total	**1054**	**100.0**	**1112**	**100.0**

Table 86
Number and Percent of Michigan Infant Deaths by Age of Mother, 2002-2003

Maternal Age Group	2002		2003	
	Number	Percent	Number	Percent
Under 15 years	7	0.7	8	0.7
15 to 19 years	150	14.2	147	13.2
20 to 24 years	306	29.0	289	26.0
25 to 29 years	250	23.7	274	24.6
30 to 34 years	205	19.4	234	21.0
35 to 39 years	106	10.1	123	11.1
40 years and older	26	2.5	36	3.2
Unknown	4	0.4	1	0.1
Total	**1054**	**100.0**	**1112**	**100.0**

Table 87
Number and Percent of Michigan Infant Deaths by Entrance to Prenatal Care, 2002-2003

Week of Entry to Care	2002		2003	
	Number	Percent	Number	Percent
12 weeks gestation and earlier	766	72.7	790	71.0
Greater than 12 weeks gestation	148	14.0	168	15.1
No prenatal care	66	6.3	70	6.3
Unknown	74	7.0	84	7.6
Total	**1054**	**100.0**	**1112**	**100.0**

Table 88
Number and Percent of Michigan Infant Deaths by Adequacy of Prenatal Care, 2002-2003

Kessner's Index	2002		2003	
	Number	Percent	Number	Percent
Adequate	669	63.5	702	63.1
Intermediate	181	17.2	198	17.8
Inadequate	191	18.1	200	18.0
Unknown	13	1.2	12	1.1
Total	**1054**	**100.0**	**1112**	**100.0**

FIMR Team Findings from Case Reports

General Findings

The following findings reflect the aggregate work of local teams, and may provide guidance in developing prevention strategies at a state level. Since very few of the infant deaths in Michigan are currently reviewed, it is difficult to show significant findings. Trends found in the FIMR findings may be a statistical artifact of low sample size or real insight into issues that currently have few other measures. Persons developing prevention strategies are encouraged to take these findings into consideration, as they could potentially be an early warning of problem issues.

Table 89
Number and Percent of FIMR Deaths Reviewed by County*

County	2002		2003	
	Number	Percent	Number	Percent
Berrien	–	–	26	11.6
Calhoun	3	2.6	10	4.5
Genesee	5	4.3	4	1.8
Kalamazoo	26	22.4	17	7.6
Kent	16	13.8	14	6.3
Ingham	–	–	1	0.4
Jackson	–	–	13	5.8
Oakland	31	26.7	28	12.5
Saginaw	14	12.1	18	8.0
Washtenaw	–	–	24	10.7
Wayne	21	18.1	64	28.6
Intertribal Council	–	–	5	2.2
Total	**116**	**100.0**	**224**	**100.0**

* Berrien, Ingham, Jackson, Washtenaw and the Intertribal Council did not conduct any reviews in 2002. Branch and Lapeer had not turned in any cases for either year at the time of this writing.

Some local teams reviewed more deaths than are reported here, but did not submit that information to the state.

Table 90
Number and Percent of FIMR Deaths Reviewed by Age Group

Age Group	2002		2003	
	Number	Percent	Number	Percent
Less than 24 Hours	27	23.3	95	42.4
Early Neonatal (1-6 Days)	27	23.3	41	18.3
Late Neonatal (7-27 Days)	16	13.8	24	10.7
Post Neonatal (28-364 Days)	45	38.8	60	26.8
Unknown	1	0.9	4	1.8
Total	**116**	**100.0**	**224**	**100.0**

The majority of deaths reviewed by FIMR teams in 2002 and 2003 were neonatal deaths (68%), most of them related to complications caused by prematurity and low birth weight (LBW).

Table 91
Number and Percent of FIMR Deaths Reviewed by Manner of Death

Manner of Death	2002		2003	
	Number	Percent	Number	Percent
Natural*	96	82.8	199	88.8
Accidental	15	12.9	16	7.1
Homicide	1	0.9	0	0.0
Undetermined	4	3.4	6	2.7
Unknown	0	0.0	3	1.3
Total	**116**	**100.0**	**224**	**100.0**

* Death from a medical or internal cause, such as complications of prematurity, congenital anomalies, etc.

Table 92
Number and Percent of FIMR Deaths Reviewed by Cause of Death

Cause of Death	2002		2003	
	Number	Percent	Number	Percent
Perinatal Condition	64	55.2	134	59.8
Prematurity (28-37 wks)	5	4.3	9	4.0
Extreme Prematurity (<28 wks)	53	45.7	124	55.4
Hypoxia	5	4.3	0	0.0
Respiratory Distress	1	0.9	1	0.4
Congenital Anomaly	11	9.5	39	17.4
Nervous System	2	1.7	9	4.0
Cardiovascular	3	2.6	9	4.0
Respiratory	0	0.0	5	2.2
Genitourinary	3	2.6	3	1.3
Musculoskeletal	0	0.0	4	1.8
Chromosomal	3	2.6	4	1.8
Other	0	0.0	5	2.2
Infection	7	6.0	11	4.9
Nervous System	1	0.9	1	0.4
Respiratory	3	2.6	7	3.1
Septicemia	2	1.7	1	0.4
Other	1	0.9	2	0.9
Injury	17	14.7	15	6.7
Drowning	2	1.7	0	0.0
Fire / Burn	0	0.0	1	0.4
Poisoning	0	0.0	1	0.4
Suffocation	15	12.9	13	5.8
SIDS	12	10.3	15	6.7
Other	2	1.7	2	0.9
Undetermined	3	2.6	5	2.2
Unknown	0	0.0	3	1.3
Total	**116**	**100.0**	**224**	**100.0**

The leading causes of infant death in Michigan are perinatal conditions including low birth weight and prematurity, congenital anomalies, suffocation and sudden infant death syndrome (SIDS). About 89% of the known causes of infant deaths reviewed by teams fell into one of these categories. Deaths due to prematurity accounted for over half of the cases reviewed for both years.

Table 93
Number and Percent of FIMR Deaths Reviewed by Birth Weight

Birth Weight	2002		2003	
	Number	Percent	Number	Percent
Under 750 grams	50	43.1	115	51.3
750 grams to 1,499 grams	13	11.2	23	10.3
1,500 grams to 2,499 grams	15	12.9	27	12.1
2,500 grams and over	36	31.0	44	19.6
Unknown	2	1.7	15	6.7
Total	**116**	**100.0**	**224**	**100.0**

About 68% of the cases reviewed by local FIMR teams in 2002 and 74% of cases reviewed in 2003 were LBW - less than 5 pounds and 8 ounces or 2,500 grams. Of these low birth weight babies, approximately 67% who die are extremely LBW - weighing less than 1 pound 6.5 ounces (750 grams) at birth. In contrast, only eight percent of all live births in Michigan in 2002 were LBW.

Table 94
Number and Percent of FIMR Deaths Reviewed by Gestational Age

Gestational Age	2002		2003	
	Number	Percent	Number	Percent
Under 24 weeks	38	32.8	96	42.9
24 weeks to 31 weeks	25	21.6	43	19.2
32 weeks to 36 weeks	15	12.9	31	13.8
37 weeks and over	36	31.0	47	21.0
Unknown	2	1.7	7	3.1
Total	**116**	**100.0**	**224**	**100.0**

One of the biggest predictors of infant death is the gestational age of the infant at birth. Babies born under 24 weeks gestation have very low survival rate, despite advances in medicine and neonatal technology. While 67% of the cases reviewed by FIMR teams in 2002 and 76% in 2003 were premature (before 37 weeks of gestation), 33% and 43% respectively were considered "pre-viable," or too small and too early to survive.

Maternal Characteristics

FIMR teams review a higher percentage of infant deaths to black mothers than is documented in Michigan's infant mortality. This is due to a combination of factors: some teams are located in high black populated areas, and some teams choose to review deaths of infants to black mothers exclusively.

Table 95
Number and Percent of FIMR Deaths Reviewed by Race / Ethnicity of Mother

Maternal Race / Ethnicity	2002		2003	
	Number	Percent	Number	Percent
White	40	34.5	71	31.7
Black	71	61.2	133	59.4
Hispanic / Latina	3	2.6	7	3.1
Native American	0	0.0	4	1.8
Asian / Pacific Islander	1	0.9	4	1.8
Multi-racial	0	0.0	2	0.9
Unknown	1	0.9	3	1.3
Total	**116**	**100.0**	**224**	**100.0**

While black infant births make up about 18% of all Michigan live births, black infant deaths make up nearly 38% of the infant deaths. Michigan consistently shows a ratio between 2:1 and 3:1 for black infant deaths to white infant deaths, and currently ranks fifth worst among states for overall black infant mortality.[2] As a result, local FIMR communities are conducting analyses of infant deaths by race of the mothers.

Table 96
Number and Percent of FIMR Deaths Reviewed by Age of Mother

Maternal Age Group	2002		2003	
	Number	Percent	Number	Percent
Under 15 years	0	0.0	2	0.9
15 to 19 years	25	21.6	42	18.8
20 to 24 years	38	32.8	64	28.6
25 to 29 years	18	15.5	51	22.8
30 to 34 years	22	19.0	37	16.5
35 to 39 years	11	9.5	16	7.1
40 years and older	1	0.9	8	3.6
Unknown	1	0.9	4	1.8
Total	**116**	**100.0**	**224**	**100.0**

Table 97
Number and Percent of FIMR Deaths Reviewed by Maternal Risk Factors
(N=116 in 2002 and N=224 in 2003)

Factors	2002		2003	
	Number	Percent	Number	Percent
First Pregnancy <18 Years Old	39	33.6	64	28.6
< 12th Grade Education	36	31.0	71	31.7
Unintended Pregnancy	48	41.4	101	45.1

[2] March of Dimes, PeriStats, 1998-2000.

Twenty percent of the infant deaths reviewed were to teenage mothers (age 19 and under). For nearly one of three cases reviewed, the mother having the loss began childbearing as a teen. While teen pregnancy and infant deaths associated with teen pregnancy represent a significant medical and social problem, the consequences of early childbearing go well beyond the teen years alone. Education may be interrupted or suspended altogether, seen again in the trend of one out of three mothers experiencing a loss having less than a high school education.

In Michigan, approximately 40% of all births are unintended (mistimed or unwanted), and approximately 65% of Medicaid births are unintended.[3] While there is no direct association with infant death, women who have unwanted or mistimed pregnancies are more likely to be poorly committed to the outcome. They are also less likely to seek adequate prenatal care and change risky behaviors, including substance use and abuse.

Prenatal Care

FIMR teams review a higher percentage of infant deaths to mothers who enter prenatal care late than is documented in Michigan's infant mortality. This is possibly due to some teams located in urban areas that tend to have high-risk populations who are more likely to have issues with medical access and compliance.

Table 98
Number and Percent of FIMR Deaths Reviewed by Entrance to Prenatal Care

Week of Entry to Care	2002		2003	
	Number	Percent	Number	Percent
12 weeks gestation and earlier	58	50.0	112	50.0
Greater than 12 weeks gestation	34	29.3	59	26.3
Unknown	24	20.7	53	23.7
Total	**116**	**100.0**	**224**	**100.0**

Table 99
Number and Percent of FIMR Deaths Reviewed by Adequacy of Prenatal Care

Kessner's Index	2002		2003	
	Number	Percent	Number	Percent
Adequate	43	37.1	83	37.1
Intermediate	6	5.2	18	8.0
Inadequate	15	12.9	30	13.4
Unknown	52	44.8	93	41.5
Total	**116**	**100.0**	**224**	**100.0**

[3] Michigan Pregnancy Risk Assessment Monitoring System (PRAMS) annual report, 2001.

Local review teams remain concerned about the number of infant deaths associated with less than adequate prenatal care, regardless of the cause of death. In 2002 and 2003 case reviews, 50% of moms entered care during their first trimester (the first 12 weeks of pregnancy), and fewer than one in three moms received "adequate" prenatal care (taking into account the necessary number of prenatal care visits based on Kessner's Index).

Mortality in the Neonatal Period

The rise in Michigan infant death rates from 2002 to 2003 is from a rise in death rates during the neonatal period. While Child Death Review does a good job of reviewing infant deaths in the postneonatal period, FIMR provides a real insight into deaths occurring in the neonatal period. Of the total infant deaths that occurred in Michigan in 2003, 69% were in the neonatal period. And 75% of these neonatal deaths were associated with being born too small and too soon.

In 2002, there were 15,510 preterm births in Michigan, representing 12% of all live births. Between 1992 and 2002, the rate for infants born preterm in Michigan increased by more than 10%. There were 55 neonatal deaths reviewed by FIMR teams in 2002 from perinatal conditions associated with premature birth, and 124 premature neonatal deaths reviewed in 2003. FIMR teams collect information on multiple factors known to be highly associated with infant deaths due to prematurity.

Table 100
Number and Percent of Premature Neonatal FIMR Deaths Reviewed by Maternal Medical Conditions (N=55 in 2002 and N=124 in 2003)

Medical Condition	2002		2003	
	Number	Percent	Number	Percent
Infection: BV or Chorioamnionitis	25	45.5	68	54.8
Sexually Transmitted Infection	9	16.4	18	14.5
Incompetent Cervix	9	16.4	24	19.4
Previous VIP or SAB	24	43.6	55	44.4
Previous Fetal Loss	9	16.4	11	8.9
Previous Infant Loss	3	5.5	1	0.8
Obesity	20	36.4	33	26.6
Poor Nutrition	6	10.9	16	12.9

Infections, such as bacterial vaginosis (BV) and sexually transmitted infections, are thought to pre-dispose a woman to preterm labor. Other events that may weaken the cervix, such as previous elective abortion, spontaneous miscarriage, previous infant loss or stillbirth have been identified as risk factors for preterm delivery. In the cases of premature infant deaths reviewed by FIMR teams in 2002 and 2003, nearly half of the women had had either a previous voluntary interruption of pregnancy (VIP) or a spontaneous miscarriage (SAB). Previous loss of either a live born or stillborn infant affected about one in seven of the women whose babies died due to prematurity.

Less understood, but clearly present as a risk factor in cases of premature infant deaths reviewed by teams, is the role of maternal obesity and poor nutrition in birth outcome. Nearly one half of women of childbearing age in Michigan are either overweight or obese (BMI > 25). In the cases reviewed by teams for prematurity in 2002 and 2003, one in three moms were obese. Obesity places moms at greater risk for pregnancy complications such as hypertension and pre-eclampsia, diabetes, thromboembolic disease, and increased infection complications possibly due to compromised immune system and hygiene.

Table 101
Number and Percent of Premature Neonatal FIMR Deaths Reviewed by Maternal Substance Use (N=55 in 2002 and N=124 in 2003)

Substance Used	2002		2003	
	Number	Percent	Number	Percent
Smoked during pregnancy	15	27.3	47	37.9
Drank alcohol during pregnancy	8	14.5	18	14.5
Used illicit drugs during pregnancy	8	14.5	28	22.5

In Michigan in 2003, 18% of mothers of infants who were born live and died in the neonatal period reported having smoked tobacco during pregnancy, two percent reported having used alcohol and 25% reported having used illicit drugs. These statistics are from birth certificates and are thought to be extremely under-reported because it is "self-report." It is believed that FIMR teams are able to look at substance use and abuse issues with greater accuracy by combining medical chart abstraction with confidential home interview information. The identification of tobacco and alcohol use during pregnancy appears to be significantly higher with FIMR (two and seven times greater, respectively); however, this could be an artifact of sampling, since only 16% of neonatal Michigan deaths were reviewed by FIMR in 2003.

"I think that a clinic with medical staff trained in substance abuse would have helped me... maybe someone sensitive to this crack addicted mom who has let her guard down. It took everything out of me to admit to someone that I was on drugs, all the time fearful of what the staff is thinking of me, whether I'd be arrested, my other kids taken."

~ 24 year old mom who delivered at 21.5 weeks gestation

Table 102
Number and Percent of Premature Neonatal FIMR Deaths Reviewed by Maternal Psychosocial Risk Factors (N=55 in 2002 and N=124 in 2003)

Psychosocial Risk Factor	2002		2003	
	Number	Percent	Number	Percent
Self pay; medically indigent	3	5.5	13	10.5
Medicaid; managed care	23	41.8	62	50.0
Lack of social support	4	7.3	15	12.1
History of mental illness	7	12.7	10	8.1
Depression or other mental illness during pregnancy or postpartum	9	16.4	16	12.9
Multiple stresses / social chaos	25	45.5	35	28.2
Abuse / harassment	5	9.1	15	12.1

Poverty, stress and lack of social support have been emerging as factors that may play a role in predisposition to pre-term labor, especially for black women. Close to half of the prematurity deaths reviewed by FIMR teams in 2002 and over a quarter of those reviewed in 2003 were identified as having multiple stressors or "social chaos" present in the lives of the moms. In more than half of the cases reviewed, moms either lacked insurance or were on Medicaid. Depression or other mental illness during pregnancy was also a significant risk factor, occurring in one in seven moms in the cases reviewed both in 2002 and in 2003. Also, qualitative data obtained from the mother's perspective during a home interview often provides insights regarding gaps in care and barriers to services that vital statistics cannot.

"Whenever I went for my prenatal care appointment, I was careful to take my husband and we always wore our wedding rings. I didn't want to be seen as just another poor, single black woman on welfare having a baby.."

~ 27 year old married black women whose first baby was born at 24 weeks gestation and died at 2 days old

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Local Initiatives to Prevent Infant Deaths

Racial Disparities

Many local FIMRs have identified that among the stressors affecting moms during pregnancy is a fear or dissatisfaction with the perinatal health care system. In response to these findings, and the unacceptably high black infant mortality rates and continued disparity between black and white infant deaths, multiple communities have hosted workshops and forums to raise awareness and bring about positive changes in the health care system.

Saginaw – The Healthy Start project hosted a series of "Undoing Racism" half-day workshops, inviting prenatal and family health care providers, clinical and support staff.

Genesee – Sponsored a physician/provider dinner with keynote speaker, addressing racial disparities in infant mortality.

Pontiac – Facilitated a training on racial disparities and transcultural nursing for all local health department and clinical nursing staff.

Safe Sleep

Kalamazoo – FIMR team has seen infant suffocation rise to the fourth leading cause of death in their community, with many parents unaware of risk factors and resources for safe infant sleeping environment. Healthy Start and FIMR personnel launched the Kalamazoo Initiative for Safe Sleep campaign (KISS). The campaign includes community baby showers, a media component to raise community awareness, a crib give-a-way project and annual education to providers and professional staff on safe sleep.

Detroit – Lead FIMR personnel partnered with Tomorrow's Child and the Detroit Department of Health and Wellness Promotion to launch a large-scale safe sleep campaign, focusing on getting the delivery hospitals in Detroit on board with unified messages and education to new families on safe sleep. A community safe sleep summit was held in June of 2002, and multiple newspaper articles and other media events have called attention to the preventable deaths in Detroit due to unsafe sleep environments and practices.

Prematurity

Kent – Finding through their FIMR reviews that many African American moms who experienced an infant loss did not have adequate prenatal care, Kent County is developing and raising funds for a Social Marketing campaign urging "Early and Often" prenatal care.

Psychosocial Needs: Assessment and Referral

Genesee – Developed and implemented the Prenatal Risk Assessment Tool (PRAT) for use by physicians to standardize assessment of mom's depression, substance use, domestic violence and multiple other psychosocial stressors in pregnancy.

Genesee, Saginaw, and Oakland – Developed and distributed community and provider resource guides – a "Yellow Pages" for support services and where to go for assistance before, during and after pregnancy.

Saginaw – Recognizing through local FIMR data that nearly 60% of moms who experienced an infant loss smoked tobacco, and 32% of moms were using either alcohol or illegal drugs, Saginaw's Healthy Start program took the lead in establishing a leadership team of 14 individuals who attended the Children's Research Triangle training in September 2002. A comprehensive community approach to substance abuse in pregnancy was developed, using an approach that incorporated Chasnoff's model for: Screening, Assessment, Referral and Treatment (SART). Chasnoff's tool, "4 P's plus," was adopted for screening, trainings were provided to all prenatal care provider sites and linkages were improved with substance abuse treatment and referrals sources.

Community Awareness

Washtenaw – In their early reviews, the FIMR team found that lack of community and provider awareness of the scope of the infant mortality problem was a barrier. FIMR and local public health staff created a display board to draw attention to issues related to infant mortality and have attended multiple community events, including health fairs and the Heritage Festival.

Branch – A rise in the number of infant deaths due to birth defects prompted Branch County to promote community education on the importance of prenatal vitamins and preconceptional intake of folic acid.

Recommendations for Policymakers

These recommendations have been reviewed and supported by the State FIMR Network for further consideration by the Michigan Department of Community Health.

1. Reinvest in outreach – restore outreach funding for public health programs to link women to health services.
   a. Expand indigenous paraprofessionals to identify and provide outreach to pregnant women and women with children under one year of age.
2. Pregnancy prevention and family planning – increase access to pregnancy prevention and family planning services as a primary prevention model.
   a. Address unintended pregnancy through exploration of the submission of a family planning 1115 waiver.
   b. Health education for women of childbearing age that includes information on nutrition, folic acid, and substance abuse.
3. Improve insurance options for adult non-pregnant women – any consideration for expanding health insurance programs should include preconception care for women who are not pregnant and of childbearing age (19-44 years).
4. Coordination of services – the state must assess its own programs, providing a state "mapping" of services that communities can then use to create a seamless system of care for women.
   a. Support the location of Women Infants and Children (WIC) services in complexes with doctor's offices and other centralized services.
5. Expand services that enhance access for high-risk populations:
   a. Increase Federally Qualified Health Centers (FQHCs) in both Detroit and in the outstate region.
   b. Develop and implement standards of care for women's health care services similar to the Early and Periodic Screening Diagnosis and Treatment (EPSDT) model of care for children.
   c. Increase public and private investments in school-based and school-linked health services.
6. Encourage local community planning and collaboration – community planning and collaboration must be supported, developing culturally and geographically appropriate public and private services that are sensitive to the needs of that particular community.
   a. Partner with employers to expand pregnancy and parenting friendly policies in workplaces.

Recommendations for Policymakers Continued...

7. Collect and analyze data for infant mortality and maternal services:
   a. Continue to collect and analyze data from FIMR sites. Target the communities with the highest infant death rates and greatest racial disparities. Consider providing seed monies to new and developing teams. And, continue technical assistance to established review and community action teams.
   b. Implement a data collection system statewide for Maternal Support Services/Infant Support Services (MSS/ISS) that includes consistent assessment of client needs and services provided.
   c. Evaluate the Medicaid data to determine how infant mortality is impacted by barriers to access such as Medicaid reimbursement policies, transportation reimbursement and provider resources/availability.
   d. Collect data for the Maternal Morbidity Review process that focuses on prematurity, low birth weight and infant mortality including chronic diseases and behavioral factors such as the impact of stress and abuse of women of childbearing age and their families.

Recommendations for Parents and Caregivers

- Be aware of the importance of planning pregnancy and optimal spacing between pregnancies.
- Understand the importance of nutrition and folic acid supplements.
- Recognize the role of stress and abuse on pregnancy outcome.
- If you are pregnant, or think you may be pregnant, see your health care provider early and often, and follow their advice.
- Avoid alcohol, tobacco and drugs during pregnancy and in the three months before pregnancy.
- Call your health care provider right away if you experience any warning signs for pre-term labor.
- Value the support of the whole community to care for mothers, pregnant women and families.

Child Deaths
IN MICHIGAN
section ten

APPENDICES

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Appendix B
Actions Taken on Recommendations from Previous Annual Reports

Regarding the Child Death Review Process:

1. Consider a state-level mechanism to assist and support local teams in developing protocols to ensure that they have timely and complete access to all information necessary for an effective review. (from 2nd annual report)
   Update: Michigan Public Health Institute now has an agreement with the Michigan Department of Community Health, Division for Vital Records and Health Statistics, on obtaining death certificates for local CDR Teams. Still, teams often lack needed information, especially medical records and if the child died in another county.

2. Provide training on the child death review process and on child death prevention to other organizations and systems. (from 2nd annual report)
   Update: CDR staff present information on child death review to many state organizations; Child Welfare Institute staff have attended the annual CDR training.

Regarding SIDS and Infant Suffocations:

3. The Michigan Department of Community Health, the Family Independence Agency, Michigan State Police, Chiefs of Police, Michigan Sheriff's Association, Michigan Association of Medical Examiners and Prosecuting Attorneys Association of Michigan should collaborate to ensure statewide utilization of Michigan standards for child death scene investigations using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model. (from 4th annual report; similar recommendation in 2nd annual report)
   Update: As of 7/1/ 2004, Public Act 179 states, in part, "The Department of Community Health shall promulgate rules and regulations under this act to promote consistency and accuracy among county medical examiners and deputy county medical examiners in determining the cause of death under this section. The department may adopt, by reference in its rules, all or any part of the "State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths" published by the Michigan Child Death Review program." MDCH is currently convening a multi-disciplinary group to advise them on this law.

4. Develop a statewide campaign on safe infant sleeping environments following the recommendations of the Consumer Product Safety Commission, and include a special focus on babysitters and child care providers. (from 2nd annual report)
   Update: MDCH is currently in collaboration with FIA, Tomorrow's Child, CDR and local community reps to develop a statewide campaign on safe infant sleep.

5. Incorporate SIDS risk reduction and safe infant sleep materials in Michigan's statewide prenatal smoking cessation programs.
   Update: Current state prenatal smoking cessation programs now include safe sleep materials.

6. Encourage local jurisdictions to require that medical examiners and law enforcement officers assigned to investigate child deaths be trained on protocols for investigating child deaths modeled after the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths.* (from 3rd annual report)
   Update: The Michigan CDR program, with funding from the Governor's Task Force on Children's Justice, held three trainings on child death scene investigation in the spring of 2003. These trainings encouraged the use of the State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths. A coordinated approach to investigations was recommended.

7. Expand state efforts to educate parents on safe infant sleep, including an emphasis on the risk of SIDS and suffocation when infants sleep on the same surface with others. (from 3rd annual report)
   Update: Tomorrow's Child has worked on this issue and developed a safe sleep brochure that has been widely distributed.

Appendix B
Actions Taken on Recommendations from Previous Annual Reports

Regarding Child Deaths from Natural Causes:

8. The Michigan Department of Community Health and the Family Independence Agency should support a partnership and the sharing of information between the Michigan Child Death Review Program and the Michigan Asthma Coalition to improve the diagnosis, treatment and prevention of childhood asthma. (from 4th annual report; similar recommendation in 3rd annual report)
   Update: MPHI currently is involved with the Michigan Asthma Coalition. The goal of the partnership is to learn from the asthma deaths that have already occurred to improve treatment and education for parents and physicians.

Regarding Motor Vehicle Crash Deaths:

9. The Michigan Legislature should amend the current graduated licensing law to place limits on the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses. This limitation should apply at all times of the day. (from 4th annual report; similar recommendations in 2nd and 3rd annual reports)
   Update: House Bill 4600 was passed by the House on Oct 30, 2003 which addressed this issue; however, the bill was amended to allow written exception permission from the teen drivers' parents. The bill was voted down in the Senate.

10. The Michigan Legislature should amend the Michigan Child Passenger law to:

    a. Require the use of a belt positioner for booster seats to protect children over age four and up to age eight and 80 pounds.

    b. Increase fines and points for those not following the law.

    c. Increase public awareness and education programs.
       Update: House Bill 4200 was introduced and referred to the Transportation Committee on 2/12/03. This bill would require that children between 40-80 lbs. and less than 4'9" in height be seated in a booster seat secured by a safety belt. Senate Bill 996 was introduced and referred to the Transportation Committee on 2/17/04. This bill would increase the fine for seat belt and child safety seat violations from $10 to $80. These bills have been the topic of meetings and hearings, but have not yet been voted upon.

Regarding Fire Deaths:

11. Encourage the Consumer Product Safety Commission to require the furniture manufacturing industry to expand the current fire retardant standards for upholstered furniture beyond commercial aircraft and prisons, to include furniture made for residential use. (from 2nd annual report)
    Update: The CPSC held a public meeting in June 2002 addressing the issue. The CPSC staff will send an updated regulatory options package within the next year to the CPSC. It will contain a revised draft standard and recommendations regarding alternatives to address fire risks association with upholstered furniture. As of 7/04, this was still in debate at the CPSC.

12. The Michigan Department of Community Health and the Michigan State Police should collaborate to develop an awareness campaign on the increased risks of fatal house fires when children play with incendiary devices. (from 4th annual report)
    Update: In February 2001, the Michigan State Police's Teaching, Educating And Mentoring (T.E.A.M.) school liaison program incorporated an additional training module on fire safety. The curriculum, taught in four graduated segments across K-12th grades, specifically addresses the risks and consequences of playing with fire.

Appendix B
Actions Taken on Recommendations from Previous Annual Reports

Regarding Drownings:

13. The Family Independence Agency's Office of Children and Adult Licensing should review current day care licensing guidelines for barriers to pools, hot tubs or open bodies of water at regulated day care homes. (from 4th annual report; similar recommendations in 2nd and 3rd annual reports)
Update: The new draft rules for day care homes state: "R 400.1814b. Water hazards and water activities. Rule 14b. (1) Each licensee/registrant must ensure that barriers exist to prevent children from gaining access to any swimming pool, drainage ditch, well, pond or other body of open water located on or adjacent to the property where the day care home is located. Such barriers must be of a minimum of 4 feet in height and appropriately secured to prevent children from gaining access to such areas. (2) The use of spa pools, hot tubs and fill-and-drain wading pools is prohibited. (3) Hot tubs and spas, whether indoors or outdoors, must be inaccessible to children and have a locked hard cover." Representatives from the CDR State Advisory Team met with the director of Children and Adult Licensing in July 2004 to discuss the role of CDR and make recommendation on the new licensing rules for child care. The rules change process is ongoing.

Regarding Child Abuse and Neglect Deaths:

14. The Michigan Department of Community Health, the Family Independence Agency and the Michigan Department of Education should collaborate in developing a nurse home visitation program targeting low-income first-time mothers based upon the successful "Nurse Family Partnership" model developed by Dr. David Olds. (from the 4th annual report; similar recommendations in the 2nd and 3rd annual reports)
Update: The abovementioned agencies are collaborating with the National Nurse Family Partnership, Inc. to implement a project to help first time parents succeed in Michigan. In FY 2004, four low-income cities were selected to pilot the NFP program. A team of four nurses and a supervisor from the three new cities attended the first phase of specialized training in Denver, CO in January 2004 and have begun providing services.

15. Ensure that the Family Independence Agency's Children's Protective Services worker training emphasizes assessment for medical neglect. (from 2nd annual report)
Update: A training session in medical issues in child abuse cases was developed and provided in March of 2004. In addition, Medical Resource Services offers case specific support through consultation with field staff, and reviews of medical records in order to provide in-depth explanations of medical findings relevant to child abuse and neglect cases.

16. The Family Independence Agency should increase and improve the resources available to educate and support the medical community and other mandated reporters to understand, identify and report suspected child abuse and/or neglect. (from 4th annual report)
Update: A guide for mandated reporters was recently released by DHS. It is to serve as a tool to identify, educate and encourage reporting by mandated reporters, as well as outline the civil duty and process for reporting. Specialized training for the reporting process is currently available through the Medical Services Advisory and Prosecuting Attorneys Association of Michigan.

Regarding Suicides:

17. The Michigan Surgeon General should lead the effort to develop an Adolescent Suicide Prevention and Services strategic plan in accordance with the U.S. Surgeon General's Call to Action for Suicide Prevention. (from 4th annual report; similar recommendation in the 3rd annual report)
Update: The Michigan Suicide Prevention Coalition has been convened, consisting of representatives of the Child Death Review program, the Michigan Department of Community Health, the Department of Education and various other state and local organizations. A draft plan has been drawn up and was recently presented to the state Mental Health Commission.

Appendix C
Local Child Death Review Team Coordinators, 2002–2003

County	Coordinator(s)	Agency
Alcona	Doug Ellinger, Sheriff	Alcona County Sheriff's Department
Alger	Patricia Webster, Nursing Administrator	LMAS District Health Department
Allegan	Cathy L. Weirick, Executive Director	Allegan County CA/N Council
Alpena	Cindy Shackleton	Alpena County DHS
Antrim	Bob Lewis, Services Supervisor	Antrim County DHS
Arenac	Brian Millikin	Arenac County DHS
Baraga-Houghton-Keweenaw	Dr. Gail Shebuski, Health Officer/ Medical Director	Western UP Health Department
Barry	Dr. Jeff Chapman, Medical Examiner	Barry County Medical Examiner
	Ann Wilson	Barry County Medical Examiner's Office
Bay	Dominic Wright, Victim's Advocate	Bay County Prosecutor's Office
Benzie	Jenifer Murray, Personal Health Director	Benzie-Leelanau District Health Dept
Berrien	Margaret Penninger, Assistant Prosecutor	Berrien County Prosecutor's Office
Branch	Kim McFellin	Branch County DHS
Calhoun	Renay Montgomery	Calhoun County Health Department
Cass	Ruth Andrews, Director	Woodlands Behavioral HC Network
Charlevoix-Emmet	Rhonda Buchanan	Charlevoix Emmett DHS
	Jenny Deegan	Charlevoix Prosecutor's Office
Cheboygan	Dr. Howard Otto, Medical Examiner	Cheboygan Co Medical Examiners Office
Chippewa	Vicki Schuurhuis, Clinical Director, OB/ Nursery	War Memorial Hospital
Clare	Kathy Kent, Nursing Supervisor	Central Michigan District Health Dept
Clinton	Mary Pino, Chief Assistant Prosecutor	Clinton County Prosecutor's Office
Crawford	Amelia Afsari, Epidemiologist	District Health Department #10
Delta	Renee Barron	Delta-Menominee District Health Dept
Dickinson-Iron	Carol Thornton	Dickinson-Iron County DHS
Eaton	Linda Potter, RN	Barry-Eaton District Health Department
Genesee	Dr. Gary Johnson, Medical Director	Genesee County Health Department
	Pamala Watkins, Medical Examiner Investigator	Genesee County Health Department
Gladwin	Robert Adams, Director	Gladwin County DHS
Gogebic	Dr. Charles Iknayan, Medical Examiner	Grandview Hospital
Grand Traverse	Deanna Kelly	Grand Traverse County Health Dept
	Mary Merwin	GT County Multi-purpose Collaborative
Hillsdale	Valerie White, Assistant Prosecutor	Hillsdale County Prosecutor's Office
Huron	Mark Gaertner, Prosecuting Attorney	Huron County Prosecutor's Office
	Elizabeth Weisenbach, Assistant Prosecutor	Huron County Prosecutor's Office
Ingham	Dr. Dean Sienko, Medical Examiner	Ingham County Health Department
Ionia	Tim Click, Children's Services	Ionia/Montcalm County DHS
Iosco	Carla Grezeszak, Family Division Administrator	Iosco County Family Court
Isabella	Mari Pat Terpening, Personal Health Svcs Supervisor	Central Michigan District Health Dept

Appendix C
Local Child Death Review Team Coordinators, 2002–2003

Jackson	Jill Glair	Jackson County Health Department
Kalamazoo	Joni Idzkowski, Personal Health Services Supervisor	Kalamazoo Human Services Department
Kalkaska	Amelia Afsari, Epidemiologist	District Health Department #10
Kent	Tracy Cyrus, Child Protection Team	DeVos Children's Hospital
	Carmen Perez	Kent County Health Department
Lake	Amelia Afsari, Epidemiologist	District Health Department #10
Lapeer	D/Sgt. Nancy Stimson	Lapeer County Sheriff's Department
	Gerald Redman, Acting Program Manager	Lapeer County DHS
Leelanau	Sara Brubaker, Prosecuting Attorney	Leelanau County Prosecutor's Office
	Laurie laCross, Victims Advocate	Leelanau County Prosecutor's Office
Lenawee	Larry W. Stephens, Health Officer	Lenawee County Health Department
Livingston	Dr. Stan Reedy, Medical Director	Livingston County Health Department
	Elaine Brown, Personal and Prevention Health Services	Livingston County Health Department
Luce	Dr. James Terrian, Medical Examiner/ Director	LMAS District Health Department
Mackinac	Sgt. Mark Wilk	St. Ignace Police Department
Macomb	Dr. Kevin Lokar, Medical Director	Macomb County Health Department
	Angelo Nicholas, Director; Brenda Piekarski	Macomb County DHS
Manistee	Ford Stone, Chief Prosecutor	Manistee County Prosecutor's Office
Marquette	Diane Curry, Health Educator	Marquette County Health Department
Mason	Richard Trier, Service Manager	Mason County DHS
Mecosta	Amelia Afsari, Epidemiologist	District Health Department #10
	Kevin Courtney, Director	Big Rapids Dept of Public Safety
Menominee	Renee Barron	Delta-Menominee District Health Dept
Midland	Dr. Dennis Wagner, Deputy Medical Examiner	Mid-Michigan Regional Medical Center
	Andrea Muladore, ACSW	Mid-Michigan Regional Medical Center
Missaukee-Wexford	Dave VanHouten, Children's Services Supervisor	Missaukee-Wexford DHS
Monroe	Sandie Pierce	Monroe CMH Authority
Montcalm-Gratiot	Jamie Lovelace, Children's Services Supervisor	Ionia Montcalm District DHS
	Bonnie Ayers	Mid-Michigan District Health Dept
Montmorency	Denise Benson, Services Supervisor	Montmorency County DHS
Muskegon	Joyce L. deJong, DO, Chief ME	Muskegon County Health Department
	Roberta Skinner, Records Office	Muskegon County Health Department
Newaygo	Richard W. Peters, MD	Mercy General Health Partners
	Amelia Afsari, Epidemiologist	District Health Department #10
	Kevin Sweeney	Michigan State Police

Appendix C
Local Child Death Review Team Coordinators, 2002–2003

Oceana	Amelia Afsari, Epidemiologist	District Health Department #10
	Rahel Sollner, CPS Supervisor	Oceana County DHS
Ogemaw	Dr. James Hall, Pathologist/ME	HistoDiagnostic
Ontonagon	Sue Gilbault, Outreach Coordinator	Barba Kettle Gundlach Shelter
	Janet Holmstrom	Ontonagon County DHS
Osceola	Kaye Frederick	Osceola County Probate Court
	Becky Johnson-Himes	Central Michigan District Health Dept
	MarJean Farr, CPS Supervisor	Osceola County DHS
Oscoda	Joan Fox, Services Supervisor	Oscoda County DHS
Otsego	Kevin Hessselink, Prosecuting Attorney	Otsego County Prosecutor's Office
Ottawa	Tom Perna, CPS Supervisor	Ottawa County DHS
Presque Isle	John Keller	Alpena County DHS
Roscommon	Cynde Kochensparger, Nursing Supervisor	Central Michigan District Health Dept
Saginaw	Kristan Outwater, MD	Partners in Pediatrics
	Debbie Tubb, ME Investigator	Saginaw County Health Department
St. Clair	Amy Smith, Planning Officer	Community Mental Health
St. Joseph	Elizabeth O'Dell, Collaborative Coordinator	St. Joseph Co Human Svcs Commission
Sanilac	Dennis Smallwood, DO, Medical Examiner/Director	Sanilac County Health Department
Schoolcraft	Amy Powers, RN	LMAS Dist Health Department
Shiawassee	Cindy Eberhard, CPS Supervisor	Shiawassee County DHS
	Rose Mary Asman, Pers Health Services Director	Shiawassee County Health Dept
Tuscola	Dennis Smallwood, DO, Medical Examiner/Director	Tuscola County Health Department
Van Buren	Trooper Paula Doan	Michigan State Police
	Sandy Nicholas	Van Buren/Cass District Health Dept
Washtenaw	Susan Gialanella	Washtenaw County Human Services
Wayne	Pat Soares	Wayne County Health Department
	Dr. Charles Barone	Henry Ford Hospital
	Teresa Marshall, Child and Family Services	Wayne County DHS

Appendix D
Number of Cases Reviewed by CDR Teams by County

County	Number of Reviews in 2002	Number of Reviews in 2003	Number of Reviews 1995–2003
Alcona	2	1	4
Alger	0	2	5
Allegan	12	9	57
Alpena	0	0	10
Antrim	0	0	0
Arenac	2	1	6
Baraga	0	0	0
Barry	10	6	54
Bay	2	2	20
Benzie	0	1	1
Berrien	33	41	278
Branch	6	6	35
Calhoun	4	0	142
Cass	9	9	47
Charlevoix	6	0	8
Cheboygan	0	0	4
Chippewa	3	5	24
Clare	0	3	8
Clinton	18	10	53
Crawford	0	0	18
Delta	4	0	11
Dickinson	4	2	9
Eaton	9	4	68
Emmet	4	0	7
Genesee	21	18	96
Gladwin	2	5	23
Gogebic	2	0	2
Grand Traverse	0	5	6
Gratiot	6	5	31
Hillsdale	2	6	25
Houghton	0	0	0
Huron	0	5	18
Ingham	10	16	64
Ionia	12	6	38
Iosco	10	2	18
Iron	0	2	2
Isabella	7	13	47
Jackson	13	10	62
Kalamazoo	28	23	132
Kalkaska	0	0	4
Kent	85	81	440

Appendix D
Number of Cases Reviewed by CDR Teams by County

Keweenaw	0	0	0
Lake	0	2	11
Lapeer	17	13	73
Leelanau	0	5	7
Lenawee	1	9	50
Livingston	23	15	104
Luce	2	1	13
Mackinac	4	0	16
Macomb	31	21	157
Manistee	0	0	5
Marquette	0	0	10
Mason	0	0	16
Mecosta	6	5	61
Menominee	0	4	11
Midland	6	8	33
Missaukee	5	4	14
Monroe	26	14	68
Montcalm	7	17	87
Montmorency	3	0	3
Muskegon	10	9	88
Newaygo	10	6	39
Oakland	55	43	259
Oceana	10	4	40
Ogemaw	0	0	0
Ontonagon	1	1	2
Osceola	1	2	19
Oscoda	0	0	0
Ostego	4	0	14
Ottawa	24	12	103
Presque Isle	0	0	2
Roscommon	2	0	13
Saginaw	27	30	162
St. Clair	20	33	203
St. Joseph	23	11	75
Sanilac	1	1	11
Schoolcraft	1	1	2
Shiawassee	17	13	77
Tuscola	9	5	39
Van Buren	14	13	71
Washtenaw	11	14	75
Wayne	194	209	902
Wexford	8	4	34
Michigan	**899**	**828**	**4,846**

Appendix E
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2002

County of Residence	Age Group by Years					Total
	Under 1	1-4	5-9	10-14	15-18	
Alcona	1	0	0	1	1	3
Alger	1	1	0	0	0	2
Allegan	9	0	3	3	7	22
Alpena	1	0	0	0	1	2
Antrim	1	0	0	0	0	1
Arenac	1	0	0	1	2	4
Baraga	1	0	0	0	0	1
Barry	1	0	0	4	1	6
Bay	7	0	1	2	2	12
Benzie	0	0	0	0	0	0
Berrien	18	2	1	1	8	30
Branch	4	1	1	0	2	8
Calhoun	15	3	4	1	6	29
Cass	7	0	2	1	2	12
Charlevoix	2	1	0	0	2	5
Cheboygan	1	0	1	1	3	6
Chippewa	2	0	0	0	2	4
Clare	1	1	1	0	0	3
Clinton	5	3	0	3	3	14
Crawford	2	2	1	0	0	5
Delta	0	0	1	0	2	3
Dickinson	0	0	0	1	0	1
Eaton	8	3	0	1	5	17
Emmet	3	0	1	1	0	5
Genesee	81	10	6	6	10	113
Gladwin	3	0	0	0	2	5
Gogebic	0	0	0	0	0	0
Grand Traverse	6	1	0	0	1	8
Gratiot	3	0	0	0	0	3
Hillsdale	2	0	0	2	1	5
Houghton	3	1	0	1	2	7
Huron	2	1	0	0	0	3
Ingham	24	4	3	2	3	36
Ionia	6	0	0	0	1	7
Iosco	2	1	0	2	3	8
Iron	0	0	0	0	1	1
Isabella	7	0	1	1	2	11
Jackson	10	1	0	4	7	22
Kalamazoo	35	7	3	5	7	57
Kalkaska	3	0	0	1	0	4
Kent	75	6	4	12	25	122
Keweenaw	1	0	0	0	0	1

Appendix E
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2002

Lake	0	0	0	0	0	0
Lapeer	6	4	3	5	4	22
Leelanau	2	0	0	0	1	3
Lenawee	3	0	0	0	2	5
Livingston	6	3	1	0	7	17
Luce	0	0	0	0	2	2
Mackinac	0	0	0	0	1	3
Macomb	53	5	8	6	23	95
Manistee	2	0	1	3	1	7
Marquette	5	2	0	0	2	9
Mason	1	0	1	0	1	3
Mecosta	4	0	2	4	1	11
Menominee	2	0	0	0	2	4
Midland	7	2	0	1	2	12
Missaukee	0	2	0	0	2	4
Monroe	16	4	1	3	5	29
Montcalm	6	0	0	0	2	8
Montmorency	0	0	0	1	0	1
Muskegon	14	2	0	4	6	26
Newaygo	3	2	0	0	5	10
Oakland	95	13	8	16	21	153
Oceana	4	1	0	0	3	8
Ogemaw	0	0	0	1	1	2
Ontonagon	0	0	0	0	0	0
Osceola	2	0	0	1	1	4
Oscoda	1	0	0	0	3	4
Ostego	1	0	1	0	2	4
Ottawa	23	4	6	4	8	45
Presque Isle	1	0	0	0	0	1
Roscommon	2	0	0	0	0	2
Saginaw	24	3	6	0	10	43
St. Clair	13	2	1	2	4	22
St. Joseph	7	2	0	1	3	13
Sanilac	1	1	0	0	1	3
Schoolcraft	0	0	0	0	2	2
Shiawassee	12	0	0	2	4	18
Tuscola	9	0	2	0	4	15
Van Buren	5	1	1	1	5	13
Washtenaw	25	3	4	8	6	46
Wayne	343	46	40	38	76	543
Wexford	2	0	0	0	1	3
Michigan	**1,054**	**151**	**120**	**160**	**338**	**1,823**

Data Source: Michigan Residents Death File, Division for Vital Records and Health Statistics, Office of the Registrar, Michigan Department of Community Health

Appendix F
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2003

County of Residence	Age Group by Years					Total
	Under 1	1-4	5-9	10-14	15-18	
Alcona	4	0	0	1	0	5
Alger	2	0	0	0	0	2
Allegan	14	0	1	1	3	19
Alpena	0	0	0	0	0	0
Antrim	0	0	0	0	1	1
Arenac	2	0	0	0	2	4
Baraga	0	0	0	0	2	2
Barry	4	1	0	2	3	10
Bay	8	1	0	1	3	13
Benzie	4	0	0	1	1	6
Berrien	19	1	1	6	6	33
Branch	5	3	0	3	2	13
Calhoun	16	2	0	1	4	23
Cass	4	0	1	2	0	7
Charlevoix	1	1	0	0	0	2
Cheboygan	2	0	1	0	0	3
Chippewa	3	0	0	0	1	4
Clare	7	1	1	2	0	11
Clinton	9	0	0	1	2	12
Crawford	2	0	0	0	0	2
Delta	7	1	0	0	1	9
Dickinson	1	0	0	0	1	2
Eaton	6	2	0	3	5	16
Emmet	2	0	0	1	1	4
Genesee	71	6	8	7	21	113
Gladwin	2	0	0	0	1	3
Gogebic	0	0	0	0	1	1
Grand Traverse	4	1	1	0	0	6
Gratiot	2	0	1	1	1	5
Hillsdale	4	1	1	2	0	8
Houghton	3	0	0	0	2	5
Huron	0	0	0	0	2	2
Ingham	25	6	1	3	6	41
Ionia	5	1	1	0	5	12
Iosco	0	0	0	0	1	1
Iron	0	0	0	0	2	2
Isabella	7	0	0	1	4	12
Jackson	20	0	7	4	8	39
Kalamazoo	26	2	4	4	7	43
Kalkaska	2	0	0	0	0	2
Kent	88	7	6	12	18	131
Keweenaw	0	0	0	0	0	0

Appendix F
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2003

Lake	3	0	0	0	0	3
Lapeer	6	4	0	1	2	13
Leelanau	4	0	0	0	0	4
Lenawee	5	1	2	2	2	12
Livingston	16	0	0	4	4	24
Luce	1	0	0	0	0	1
Mackinac	1	0	0	0	0	1
Macomb	59	9	7	10	20	105
Manistee	6	0	0	0	0	6
Marquette	1	1	1	0	1	4
Mason	3	0	0	1	0	4
Mecosta	3	1	0	0	2	6
Menominee	0	1	0	0	1	2
Midland	4	1	2	1	5	13
Missaukee	3	0	0	0	3	6
Monroe	3	1	1	2	3	10
Montcalm	10	1	1	2	5	19
Montmorency	0	0	0	0	0	0
Muskegon	25	4	1	4	5	39
Newaygo	2	1	1	1	0	5
Oakland	106	16	14	9	23	168
Oceana	2	0	1	0	1	4
Ogemaw	0	0	0	0	0	0
Ontonagon	0	0	0	1	0	1
Osceola	2	2	1	0	2	7
Oscoda	1	0	0	0	0	1
Ostego	0	1	0	0	1	2
Ottawa	22	2	2	4	5	35
Presque Isle	1	0	0	0	0	1
Roscommon	1	0	1	0	0	2
Saginaw	24	3	4	3	6	40
St. Clair	16	4	3	4	7	34
St. Joseph	6	3	0	3	4	16
Sanilac	2	1	1	1	0	5
Schoolcraft	0	1	0	0	0	1
Shiawassee	6	0	0	4	1	11
Tuscola	4	4	0	0	3	11
Van Buren	6	3	1	2	2	14
Washtenaw	27	3	4	3	3	40
Wayne	349	39	29	40	74	531
Wexford	1	0	0	0	0	1
Michigan	**1,112**	**144**	**112**	**161**	**302**	**1,831**

Data Source: Michigan Residents Death File, Division for Vital Records and Health Statistics, Office of the Registrar, Michigan Department of Community Health

Appendix G
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Year of Death, 1994-2003

County of Residence	Year of Death										2003 Population, Ages 0-18	2003 Rate per 100,000 Population
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		
Alcona	2	1	0	2	0	0	2	0	3	5	2,116	**
Alger	1	1	2	2	2	1	1	2	2	2	1,940	**
Allegan	21	19	23	16	29	19	17	21	22	19	31,267	60.8
Alpena	2	3	7	4	5	14	4	4	2	0	7,242	**
Antrim	5	4	6	7	0	2	3	3	1	1	5,665	**
Arenac	3	2	2	1	5	0	3	2	4	4	3,930	**
Baraga	2	2	1	3	1	1	1	0	1	2	1,988	**
Barry	10	9	6	15	14	14	11	13	6	10	15,723	63.6
Bay	15	23	21	14	14	13	15	21	12	13	27,108	48.0
Benzie	3	5	2	3	0	2	1	1	0	6	3,951	**
Berrien	43	47	40	46	32	43	37	37	30	33	42,960	76.8
Branch	9	6	9	6	9	9	6	12	8	13	11,693	111.2
Calhoun	26	25	25	47	22	25	29	40	29	23	37,114	62.0
Cass	15	11	9	11	11	5	11	4	12	7	12,914	**
Charlevoix	4	7	8	6	6	5	4	3	5	2	6,830	**
Cheboygan	5	6	3	6	6	2	5	4	6	3	6,394	**
Chippewa	7	9	5	6	4	3	7	7	4	4	8,237	**
Clare	8	5	7	6	5	7	6	1	3	11	7,711	142.7
Clinton	7	11	4	11	8	8	10	8	14	12	18,346	65.4
Crawford	3	4	4	1	1	3	5	3	5	2	3,463	**
Delta	12	6	3	7	3	2	9	8	3	9	8,978	**
Dickinson	4	3	3	3	5	3	2	4	1	2	6,659	**
Eaton	17	14	21	5	14	13	15	7	17	16	27,431	58.3
Emmet	2	4	2	6	2	6	6	2	5	4	8,111	**
Genesee	148	122	139	138	122	119	117	105	113	113	123,879	91.2
Gladwin	4	10	6	4	6	7	2	5	5	3	6,249	**
Gogebic	2	3	1	8	3	3	2	1	0	1	3,365	**
Grand Traverse	8	8	13	11	12	11	11	13	8	6	20,183	**
Gratiot	10	11	9	7	6	7	6	6	3	5	10,239	**
Hillsdale	19	9	7	14	8	13	12	9	5	8	12,488	**
Houghton	4	6	3	7	5	7	2	1	7	5	8,331	**
Huron	7	6	7	4	8	5	10	6	3	2	8,355	**
Ingham	63	50	50	42	46	41	50	43	36	41	71,232	57.6
Ionia	11	9	12	13	4	7	18	16	7	12	16,944	70.8
Iosco	8	5	2	1	3	1	2	6	8	1	5,885	**
Iron	0	3	0	0	4	2	3	0	1	2	2,533	**
Isabella	13	11	8	7	13	6	7	10	11	12	14,425	83.2
Jackson	36	25	30	32	41	36	31	32	22	39	42,239	92.3
Kalamazoo	32	41	40	44	58	28	44	50	57	43	61,725	69.7
Kalkaska	4	2	5	4	3	3	3	1	4	2	4,413	**
Kent	136	120	129	98	106	119	125	119	122	131	172,084	76.1

Appendix G
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Year of Death, 1994-2003

Keweenaw	0	0	1	0	0	0	0	0	1	0	477	**
Lake	5	3	3	4	2	1	3	0	0	3	2,707	**
Lapeer	8	9	13	24	19	18	14	12	22	13	24,790	52.4
Leelanau	3	1	3	1	1	1	4	0	3	4	5,112	**
Lenawee	17	18	12	18	20	23	15	16	5	12	26,166	45.9
Livingston	13	13	25	15	23	27	18	16	17	24	47,658	50.4
Luce	0	0	2	3	0	1	2	0	2	1	1,417	**
Mackinac	1	1	5	3	0	1	3	0	3	1	2,442	**
Macomb	102	113	109	103	101	94	104	104	95	105	201,354	52.1
Manistee	1	5	5	2	5	4	0	3	7	6	5,662	**
Marquette	14	12	10	12	9	7	3	9	9	4	13,824	**
Mason	3	4	6	8	6	6	7	9	3	4	6,839	**
Mecosta	12	4	5	6	14	4	8	7	11	6	9,992	**
Menominee	6	5	4	2	4	2	6	5	4	2	5,903	**
Midland	22	10	15	15	16	20	8	11	12	13	22,522	57.7
Missaukee	1	2	3	3	2	2	3	1	4	6	4,001	**
Monroe	26	22	29	25	18	10	16	27	29	10	40,256	24.8
Montcalm	10	13	11	12	18	24	12	13	8	19	17,016	111.7
Montmorency	3	1	1	1	0	1	0	1	1	0	2,079	**
Muskegon	43	37	37	39	39	46	23	43	26	39	48,387	80.6
Newaygo	12	9	9	12	8	6	6	7	10	5	14,213	**
Oakland	177	180	148	175	168	147	180	153	153	168	310,836	54.0
Oceana	4	5	5	4	7	2	7	6	8	4	7,802	**
Ogemaw	4	6	7	3	9	2	5	2	2	0	5,055	**
Ontonagon	0	1	1	0	1	0	0	0	0	1	1,455	**
Osceola	2	2	4	5	9	6	7	6	4	7	6,298	**
Oscoda	3	4	1	1	4	1	5	1	4	1	2,148	**
Ostego	3	2	6	5	3	4	5	3	4	2	6,334	**
Ottawa	38	40	39	31	44	39	45	48	45	35	72,492	48.3
Presque Isle	0	7	0	0	2	4	5	4	1	1	2,930	**
Roscommon	2	4	4	4	5	7	2	3	2	2	5,258	**
Saginaw	51	48	49	51	47	43	43	38	43	40	56,948	70.2
St. Clair	39	20	32	32	15	29	26	27	22	34	44,997	75.6
St. Joseph	12	18	11	10	13	8	11	20	13	16	17,548	91.2
Sanilac	16	13	7	3	7	10	11	8	3	5	11,830	**
Schoolcraft	1	2	3	0	4	0	1	1	2	1	1,978	**
Shiawassee	11	11	10	14	13	6	8	15	18	11	19,424	56.6
Tuscola	21	18	17	17	13	12	15	13	15	11	15,427	71.3
Van Buren	15	19	15	17	25	21	13	17	13	14	22,003	63.6
Washtenaw	43	50	34	39	36	42	51	52	46	40	80,730	49.5
Wayne	726	654	603	581	570	554	536	468	543	531	590,255	90.0
Wexford	7	8	5	4	5	12	8	5	3	1	8,191	**
Michigan	**2,209**	**2,062**	**1,985**	**1,973**	**1,952**	**1,863**	**1,895**	**1,804**	**1,823**	**1,831**	**2,685,096**	**68.2**

** Rates are too small to calculate (<10 cases). Note: Rates based on 20 or fewer deaths may be unstable. Use with caution.

Data Sources: Michigan Residents Death File, Division for Vital Records and Health Statistics, Office of the Registrar, Michigan Department of Community Health

Bridged Vintage 2003 Postcensal File, National Center for Health Statistics

Appendix H
FIMR Contacts

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Marilynn Smyth	Detroit Department of Health and Wellness Promotion
Lynn Kleiman	
Elizabeth Kushman	Intertribal Council of Michigan


Keeping
Kids
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This report is written in memory of all of the children in Michigan who have died. The Michigan Child Death State Advisory Team issues this report with the hope that it will encourage additional efforts, both in local communities and among our state leaders, to keep every child in Michigan safe and healthy.

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